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A review of the southern African spiders of the family Cyatholipidae Simon, 1894 (Araneae: Araneomorphae)

by

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ABSTRACT

The African fauna of Cyatholipidae (Araneae; Araneomorphae), comprising 14 species in 4 genera from South Africa, is revised, and a key to the species provided.

New genera: *Ilisoa* (type species *knysna* sp. n.); *Isicabu* (type species *reavelli* sp. n.); *Ulwembua* (type species *pulchra* sp. n.).

New species: *Cyatholipus tortilis, C. avus, C. icubatus, C. isolatus, Ilisoa knysna, Il. hawequas, Isicabu reavelli, Is. zuluensis, Is. capensis, Ulwembua pulchra, U. denticulata, U. outeniqua.*

INTRODUCTION

The small to minute spiders of the family Cyatholipidae Simon, 1894 are known from several regions representing former parts of Gondwanaland: New Zealand, Australia, the Neotropics (Jamaica), and Africa. The African fauna has hitherto been known from two species of *Cyatholipus* recorded from South Africa, but the probable richness of the African fauna has become apparent with the discovery of 12 new species. In this paper four new *Cyatholipus* and eight additional new species are described for which three new genera are proposed, effectively doubling the known world cyatholipid fauna.

The status of the Cyatholipidae as a family level taxon was first recognised by Simon (1894), who established the Cyatholipeae to accommodate three species of *Cyatholipus*, two from South Africa and one from Jamaica. Wunderlich (1978), in describing *Tekellatus lamingtoniensis*, treated the Cyatholipinae as a subfamily of the Tetragnathidae. Davies (1978), describing the respiratory system of *Teemenaarus sylvestris* Davies and recognising its affinities to *Cyatholipus* Simon and *Tekella* Urquhart, proposed the family Teemenaaridae to contain them. Platnick (1979:116) emphasised that in accordance with Simon's (1894) use of Cyatholipeae as a family level taxon name, the name Cyatholipidae must have priority.

The material upon which this study is based was collected largely by the author during three years with the Natal Museum, Pietermaritzburg. It was supplemented by rich collections of Zululand spiders made by Mr P. Reavell and of southern African leaf-litter arthropods made by Dr S. Endrödy-Younga. The cyatholipid species contained within this material proved to be entirely new to science, and the large proportion of new species suggests that the African fauna is rich and poorly known.

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NATURAL HISTORY

All African Cyatholipidae for which natural history data are available are known to build small horizontal sheet webs identical to those described for Australian (Davies 1978) and New Zealand (Forster, in press) taxa. The spiders hang beneath the sheet, and are solitary, although occasionally a male is found in the same web with a penultimate female. The sheet webs are typically built between tree trunks and surrounding low shrubs or within tree buttresses, and may also be found in low vegetation or between boulders.

In southern Africa the family shows a marked predilection for forest habitats, with 11 of the 14 known species being recorded from wet temperate, montane, or subtropical forest. *Cyatholipus tortilis* sp. n. was collected in open montane grassland, but this habitat is seasonally wet and is interlaced with permanent streams harbouring tree ferns and other mesic vegetation which probably offers suitable microhabitats. The occurrence of *Ulwembua denticulata* sp. n. on low shrubs in open bush in Zululand indicates that not all species are restricted to conditions of shade and constantly high humidity. An anomaly is found in *Cyatholipus hirsutissimus* Simon which is recorded from Matjiesfontein in the western Cape Province, South Africa. This area falls in the arid Karoo biome in an area marked by annual rainfall averaging 235,0 mm. As no natural history data are available with the type specimen, it is uncertain if this species regularly occurs in open, arid country or in some mesic microenvironment, or if perhaps it was taken in the nearby Witberge mountains in an area of greater moisture availability. At the least, this mystery suggests that a rich fauna of Cyatholipidae may occur in the more arid parts of the continent in addition to the forested regions.

MATERIALS AND METHODS

Descriptions are of single specimens, noted at the head of the description, with the more important aspects of variation detailed subsequently. All measurements are in millimetres. Abbreviations referring to the ocular area, tarsal claws, and spinnerets are standard for the Araneae. For examination of minute structures specimens were placed in temporary mounts as described by Coddington (1983) and/or viewed with a JEOL T-200 SEM. Prior to SEM examination the cephalothorax and abdomen were critical-point dried. Female genitalia were excised with fine needles, cleared for three hours in warm 10 % KOH, stained lightly with chlorazol black, and temporarily mounted in lactic acid. Spermathecae were photographed with an Olympus compound photomicroscope. Drawings were made with the aid of drawing tubes (camerae lucidae) on a Wild stereomicroscope and Zeiss compound microscope, and enlarged with a Liesegang epidiascope.

Acronyms used for institutions are as follows:

(AMNH) = American Museum of Natural History, New York.
(BMNH) = British Museum (Natural History), London.
(CAS) = California Academy of Sciences, San Francisco.
(MNHN) = Muséum National d'Histoire Naturelle, Paris.
(MRAC) = Musée Royal de l'Afrique Centrale, Tervuren.
(NCP) = National Collection of Arachnida, Pretoria

(NM) = Natal Museum, Pietermaritzburg.
(NMZ) = National Museum of Zimbabwe, Bulawayo.
(OMD) = Otago Museum, Dunedin.
(SMF) = Forschungsinstitut Senckenberg, Frankfurt.
(TM) = Transvaal Museum, Pretoria.
(UMO) = University Museum, Oxford.

ACKNOWLEDGEMENTS

I am most grateful to Dr. R. Forster for his encouragement, comments, and access to a manuscript describing the cyatholipid fauna of Australia and New Zealand. Thanks go also to Dr N. Platnick for his comments, and for hospitality while visiting the AMNH. This study was based in large part upon the rich collection of Zululand spiders made by Mr. P. Reavell and deposited in the NM, and upon the rich collection of leaf-litter arthropods made across South Africa and Namibia by Dr. S. Endrödy-Younga of the TM. I am most grateful for their co-operation in making this material available for study. Teresa Meikle Griswold laboriously sorted through the leaf-litter samples and separated and identified Cyatholipidae as well as numerous other rare and interesting cryptic Arachnida. Ms B. van Hoogdalem provided expert technical assistance in all phases of the project. Various drafts of the manuscripts were typed by Mrs S. O'Connell. The staff of the University of Natal (Pietermaritzburg) Electron Microscope Unit, Mrs C. Bowland, Mr V. Bandu, and Mr A. Bruton, provided invaluable assistance. Fieldwork was made possible in part through permits from the Department of Environment Affairs, R.S.A. and the Natal Parks, Game, and Fish Preservation Board. Partial support was provided by a grant from the Council for Scientific and Industrial Research, Pretoria. For the loan of specimens I am most grateful to the following individuals and institutions: Dr. J. Heurtault (MNHN); Dr. G. McGavin (UMO); Dr N. Platnick (AMNH); Ms L. Wessels, Mr W. Haacke, and Dr S. Endrödy-Younga (TM).

TAXONOMY

Cytholipidae Simon, 1894

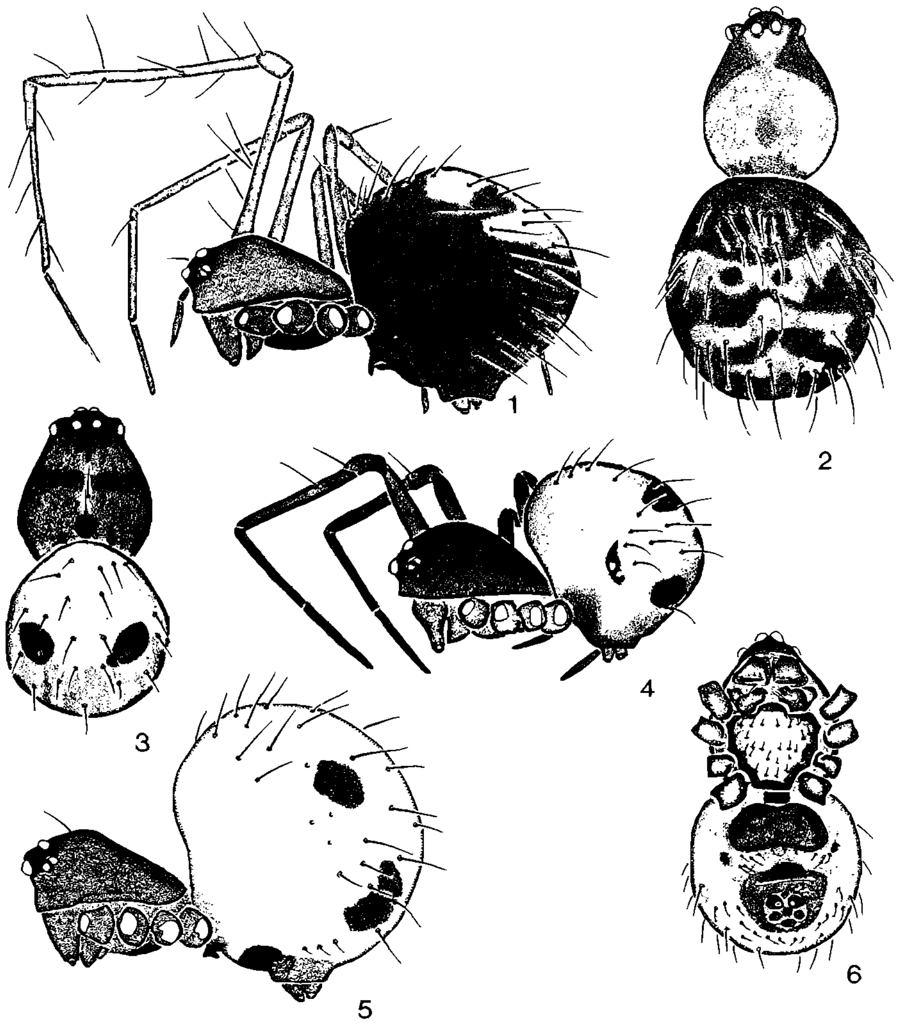
Cyatholipeae Simon, 1894:711. Roewer, 1942:967.
Cyatholipinae, Wunderlich, 1978:33.
Teemenaaridae Davies, 1978:42.
Cyatholipidae, Platnick, 1979:116. Brignoli, 1983:231. Forster (in press).

Diagnosis: Colulate, entelegyne spiders with the posterior respiratory system having two widely separated spiracles linked externally by a transverse groove (Figs 6, 60, 89, 120) and internally by a hollow transverse duct; ♂ palpus with femur to tibia simple, cymbium with retrolateral paracymbial notch (Figs 22, 66, 148).

Redescription (based upon the African fauna): Small to minute spiders; sexual dimorphism minor to absent.

Carapace convex, heart-shaped (Fig. 16) to ovoid (Fig. 78), heavily sclerotised, cuticle rugose, granulate (Fig. 80), or denticulate; thoracic fovea a broad, shallow to deep pit (Figs 4, 59) or longitudinal slit (Fig. 127); clypeus vertical, straight to weakly concave. Eight eyes in two rows, OA more than twice as wide as long (Figs 17, 79); from above AER strongly recurved, PER slightly recurved to straight; lateral eyes on low tubercle, contiguous (Figs 1, 117). Chelicerae vertical, fang furrow with four promarginal and three retromarginal teeth (Fig. 82), cheliceral gland opening a slit (Fig. 83). Sternum scutiform, weakly to strongly rugose, broadly truncate posteriorly (Figs 6, 60, 89), coxae IV widely separated; labium broad, rebordered (Fig. 125); palpal coxae converging.

Legs slender to elongate, without apophyses or modifications, cuticle with broad scales (Figs 12, 14); stout, elongate dorsal bristles (Fig. 118) apically on patellae, subbasally on tibiae of legs, and subapically on tibiae I and II; leg setae smooth to weakly barbed (Fig. 12). Trichobothria dorsal, 2 on palpal tibia, 1 subbasal,



Figs 1–6. *Cyatholipus* spp. 1–2, *C. hirsutissimus* Simon, ♀. 3–4. *C. quadrimaculatus* Simon, ♂. 5. *C. icubatus* sp. n., ♀. 6. *C. tortilis* sp. n., ♂. 1, 4–5. Lateral, 2–3. Dorsal. 6. Ventral.

1 median, 1 subdistal on tibiae I and II, 1 subbasal, median pair, and 1 subdistal on tibiae III and IV, metatarsi I–III with 1 proximal; bothrium smooth (Fig. 11). Tarsal organ domed, oval to round, with small (Figs 13, 15) to minute (Fig. 14) median aperture. Three slender claws, paired claws with weak ventral teeth (Figs 7–8), inferior claw smooth or with 1 tooth (Fig. 9). Apical claw of ♀ palpus reduced to denticle (Fig. 10).

Abdomen spherical, ovoid, to triangular, may be sclerotised around spinnerets and pedicle (Fig. 6); anterior book lungs normal, posteriorly with paired, widely separated tracheal spiracles connected by external groove (Figs 6, 60, 120) and internal hollow transverse duct (see Davies 1978, and Forster, in press, for complete description of respiratory system); 6 spinnerets (Figs 18, 119), colulus broadly to narrowly triangular (Fig. 19), with few setae.

Epigynum with depressed, transverse atrium, with scape at anterior edge of atrium (Figs 39, 72, 150) or median lobe (Figs 140–142) completely surrounded by atrium; copulatory openings beneath posterior hood (Fig. 110), posteriad of hood cuticle may be flat (Fig. 40) or raised into posteromedian lobe (Figs 70, 138, 151). Spermathecae with copulatory openings leading into ventral membranous bursal ducts, reduced, or expanded anteriorly and laterally (Figs 111–114); bursal ducts empty into small, sclerotised dorsal receptacula; fertilisation duct dorsal.

♂ palpus with segments entire, lacking apophyses. Tarsus (terminology largely follows Forster, in press) with broad, cup-shaped cymbium with retrolateral paracymbial notch (Figs 22, 64, 148); bulb with folded apical lobe beneath distal portion of embolus (Figs 85, 98, 106); median apophysis a simple (Figs 20, 30, 67, 147) or bipartite (Figs 93, 98, 106) cuticular ridge receiving apex of embolus; retromedian surface of tegulum convex or produced as median tegular protuberance (Figs 20, 95); embolus slender, originating at apex and encircling bulb (Figs 21, 103), may have distal parembolic process (Figs 28, 35, 94).

Key to the southern African species of Cyatholipidae

1 Legs short, femur I less than 1,50 times carapace length 5

— Legs elongate, femur I greater than 1,80 times carapace length 2

2(1) Carapace with dorsal light markings (Figs 122, 127); epigynal atrium greater than 0,45 width abdomen; spermathecae with anterior, membranous bursal ducts (Figs 111–113); ♂ palpus with median apophysis median (Fig. 144) to subbasal (Fig. 129). Parembolic process absent 3

— Carapace dark dorsally, unmarked (Fig. 92); epigynal atrium less than 0,35 width abdomen (Figs 75–76); spermathecae without anterior membranous bursal ducts (Fig. 116); ♂ palpus with median apophysis subapical (Fig. 103), parembolic process present (Fig. 108) .... **Isicabu capensis**

3(2) Epigynum with median lobe (Figs 134, 140); ♀ carapace denticulate posterolaterally (Fig. 121); apical lobe of tegulum smooth (Figs 129, 132), embolus extending beyond margin of bulb (Fig. 133) 4

— Epigynum with anterior scape (Fig. 137); ♀ carapace granulate-rugose; apical lobe of tegulum pustulate (Fig. 147), embolus closely encircling bulb (Fig. 144) .... **Ulwembua outeniqua**

4(3) Dorsum of carapace with broad, posteriad directed light triangle (Fig. 123); femora, tibiae, and metatarsi with pale apical annuli; epigynum (Figs 140–141) with median lobe broad, copulatory openings paired .... **Ulwembua pulchra**

— Dorsum of carapace with Y-shaped light mark (Fig. 122); legs with subapical dark annuli on femora, tibiae, and metatarsi (Fig. 121); epigynum (Figs 134–135) with median lobe narrow, copulatory openings single .... **Ulwembua denticulata**

5(1) Abdomen triangular, with fine hairs (Figs 87, 91); chelicerae with anterior projection (Fig. 87, 90); ♂ palpus with apical lobe pustulate (Figs 85, 106) 6

— Abdomen spherical to ovoid, with bristles (Figs 1, 58); chelicerae without anterior projection; ♂ palpus with apical lobe smooth (Figs 21, 63) 7

6(5) Femora and patellae with dark lateral bands (Fig. 87) .... **Isicabu reavelli**

— Legs unmarked (Fig. 90) .... **Isicabu zuluensis**

7(5) Abdomen with slender, dorsal bristles (Fig. 58); distance PME–PLE greater than twice PME diameter (Fig. 59); epigynal atrium expanded laterad and anteriad of scape (Fig. 69); paracymbial notch with upper lobe much larger than lower (Fig. 64) 8

— Abdomen with dorsal and lateral rows of stout bristles (Fig. 3); distance PME–PLE less than 1½ times PME diameter (Fig. 4); epigynum with anterior scape (Figs 39, 51); paracymbial notch (Fig. 22) with lower lobe larger than upper 9

8(7) Abdomen with dorsal longitudinal dark band (Fig. 61), with subcutaneous white deposits, venter black .... **Ilisoa knysna**

— Abdomen with dorsal longitudinal row of dark spots (Fig. 58), venter with faint grey band .... **Ilisoa hawequas**

9(7) ♀ 10

— ♂ 14

10(9) Femur I less than or equal to carapace length; abdomen white, may be spotted 11

— Femur I greater than 1,30 times carapace length; abdomen (Figs 1–2) dark grey with dorsal, transverse light bands .... **Cyatholipus hirsutissimus**

11(10) Epigynal scape with anterior, transverse ridge (Figs 48–53) 12

— Epigynal scape simple (Fig. 42) 13

12(11) Sternum with black spot (Fig. 5); abdomen with 2 pairs of dorsolateral spots; epigynal ridge narrow (Fig. 49), height 0,80 width .... **Cyatholipus icubatus**

— Sternum unmarked; abdomen with 1 pair of dorsolateral spots; epigynal ridge broad (Fig. 52), height less than 0,55 width ..... **Cyatholipus isolatus**

13(11) Epigynum (Figs 42–43) broad, atrium width greater than 1,50 times length; abdomen with 2 pairs of dorsolateral spots .. **Cyatholipus quadrimaculatus**

— Epigynum (Figs 45–46) narrow, atrium width less than 1,40 times length; abdomen with one pair of dorsolateral spots .... **Cyatholipus avus**

14(9) Abdomen with dorsolateral spots; median tegular protuberance low, pustulate (Fig. 21) 15

— Dorsum of abdomen unmarked; tegulum smooth, with raised median flange with acute apex (Figs 31, 34) .... **Cyatholipus tortilis**

15(14) Abdomen with 1 pair of dorsolateral spots; parembolic process slender, convoluted (Fig. 28) .... **Cyatholipus avus**

— Abdomen with 2 pairs of dorsolateral spots (Fig. 3); parembolic process broad, folded (Fig. 27) .... **Cyatholipus quadrimaculatus**

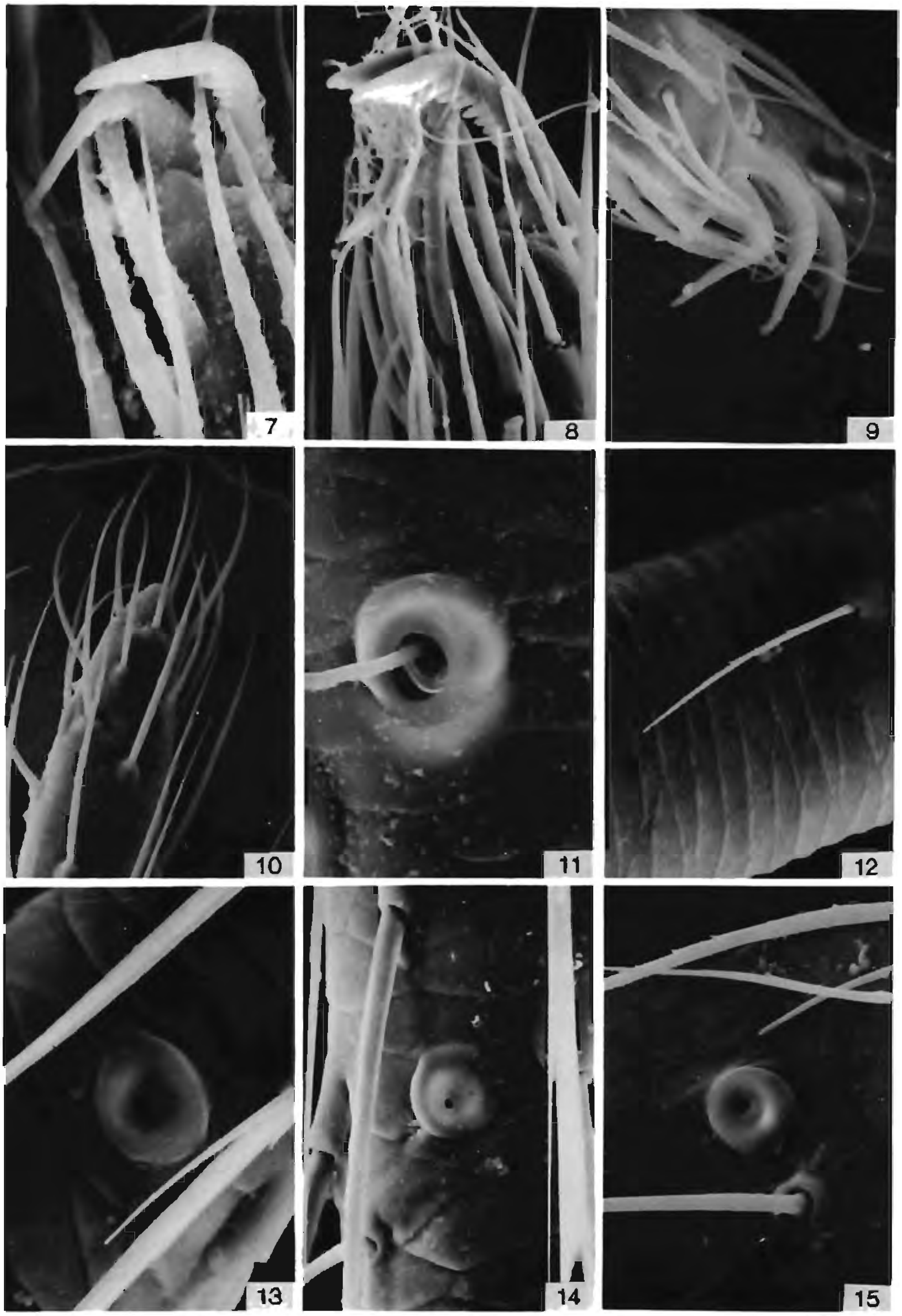
Cyatholipus Simon, 1894

Cyatholipus Simon, 1894:712 (type species, by original designation, *Cyatholipus hirsutissimus* Simon). Petrunkevitch, 1928:144. Roewer, 1942:968. Bonnet, 1956:1296.

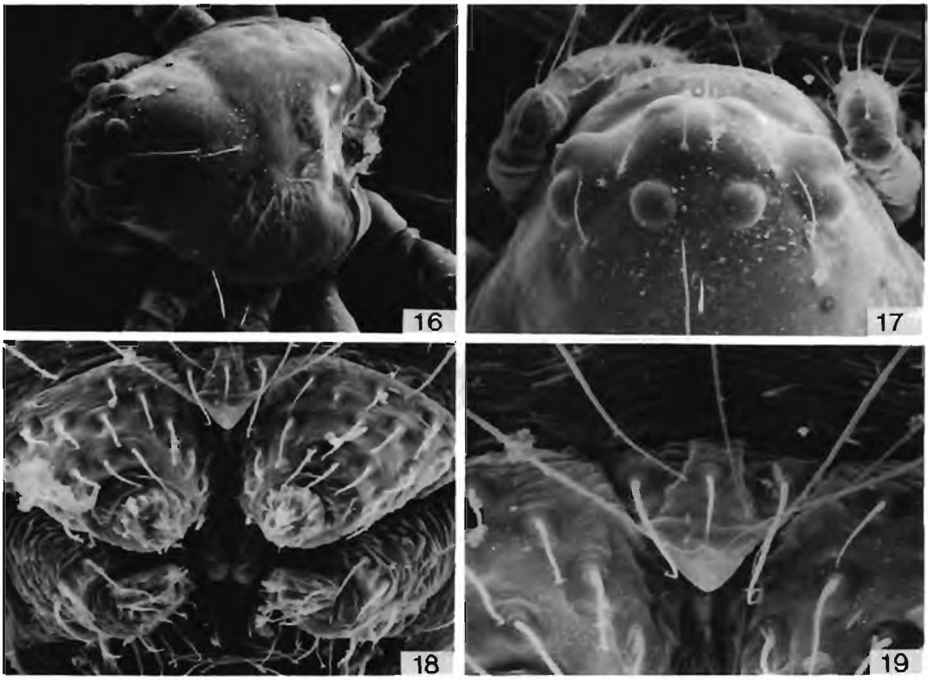
Moero O. P. Cambridge, 1903:156 (type species, by monotypy, *Moero quadrimaculata* O. P. Cambridge). Petrunkevitch, 1928:233. Roewer, 1942:457. (First synonymised by Petrunkevitch, 1928).

Diagnosis: Abdomen nearly spherical, with rows of stout bristles on dorsal and posterolateral surfaces (Figs 1, 4, 5), strong sclerotisations surrounding spinnerets and between epigastric furrow and pedicle (Fig. 6); sternum wider than long (Fig. 6); carapace domed, short, length less than 1,35 times width (Fig. 5); legs relatively short, femur I less than 1,50 times carapace length, legs without spurs or apophyses; epigynum with anterior scape (Figs 39–53); palpus with lower lobe of paracymbial notch larger than upper (Fig. 31); bulb with median apophysis simple, subapical (Figs 21, 24) and embolus with parembolic process (Figs 27, 35).

Redescription: Carapace domed, highest behind OA, height 0,36–0,49 length, short, length 1,10–1,35 times width; smooth to weakly rugose; glabrous, median row of long setae between PER and thoracic fovea; fovea a broad, deep pit (Fig. 16). Ocular area 2,10–2,42 times wider than long, AER recurved, PER nearly straight (Fig. 17); AME separated by $\frac{1}{4}$–$\frac{1}{2}$ diameter, separated from ALE by $\frac{1}{2}$–$1\frac{1}{5}$ diameter; PME separated by $\frac{1}{2}$–1 diameter, separated from PLE by $\frac{4}{5}$–$1\frac{1}{2}$ diameter, lateral eyes contiguous. Clypeus vertical to weakly concave, height 1,57–3,33 AME diameter, higher in ♂. Chelicerae without anterior projection, promargin of fang furrow with 4 large, retromargin with 3 small teeth. Sternum broad, length 0,76–0,95 width, nearly smooth, with scattered setae (Fig. 6); labium broad, width 1,38–2,00 times length; length palpal coxae 1,07–1,70 times width. Legs short (femur I less than or equal to carapace length) (Fig. 3) to slender (*hirsutissimus*: femur I 1,40 times carapace) (Fig. 1), covered with few to many long slender setae; leg formula 1243. Abdomen ovoid to nearly spherical, height 0,89–1,16 times length, extending posteriad of spinnerets for less than 0,36 length; rows of stout bristles dorsally extending onto sides and posterior; venter strongly sclerotised around spinnerets, between epigastric furrow and pedicle, and sometimes dorsad of pedicle, with large dorsomedian and small dorsolateral paired spots. Epigynum narrow, width atrium 1,40–1,70 times length, with anterior scape, posteromedian lobe weak to absent. Spermathecae (Figs 54–57) with ventral, lightly sclerotised efferent bursae emptying laterally into heavily sclerotised, nearly spherical, dorsal receptacula, without membranous ducts. ♂ palpus with lower lobe of paracymbial notch larger than upper, apex even with upper (Fig. 22); bulb with apical lobe of tegulum prominent, smooth; median apophysis simple, subapical, broad, straight to convex, retrolateral surface denticulate (Figs 24, 34); median tegular protuberance low to acutely produced, denticulate to smooth; embolus closely encircling bulb, with parembolic process.



Figs 7–15. Cyatholipidae spp. 7. *Cyatholipus quadrimaculatus* Simon, ♂. 8, 14. *Isicabu reavelli* sp. n., ♀. 9–13. *Ulwembua outeniqua* sp. n. 9, 11 ♂. 10, 12–13. ♀. 15. *Ilisoa knysna* sp. n., ♂. 7–9. Tarsus I, claws. 7. 1910 ×. 8. 1073 ×. 9. 1739 ×. 10. Apex of palpus, 536 ×. 11. Bothrium, tibia IV, 1721 ×. 12. Ordinary setae and cuticular sculpturing, femur I, 713 ×. 13–15. Tarsal organs. 13. II, 1739 × 14. III, 1131 × 15. Palpal cymbium, 1026 ×



Figs 16–19. *Cyatholipus* sp. juvenile, Grahamstown. 16. Carapace, dorsal, 56 ×. 17. Ocular area, dorsal, 110 ×. 18. Spinnerets, 266 ×. 19. Colulus, 525 ×.

Cyatholipus hirsutissimus Simon

Figs 1–2, 39–41

Cyatholipus hirsutissimus Simon, 1894:712 (type ♀ from Matjiesfontein, South Africa, MNHN). Roewer, 1942:968. Bonnet, 1956:1296.

Diagnosis: Abdomen (Fig. 2) dark grey with transverse dorsal light markings; legs with many long, slender setae on all surfaces (Fig. 1), relatively elongate, femur I 1,40 times carapace length; epigynum as in Figs 39–41.

Female (type): Total length 2,20. Carapace dark red-brown, dusky along margin and on sides of cephalic region, black along clypeal margin; black pigment along inner margin of lateral eyes, anterior to PME, and surrounding and between AME. Chelicerae yellow-brown, labium and sternum dusky, palpal coxae with median maculation. Coxae and trochanters yellow-brown, legs and palpi dusky distally on femora, shading to pale yellow-grey distally, unmarked. Abdomen dark grey, with off-white forming 3 transverse dorsal bands and posterodorsal spot; brown sclerotisation surrounding spinnerets, extending from epigastric furrow broadly surrounding pedicle to apex of abdomen, and forming dorsomedian and dorsolateral pairs of spots.

Carapace 0,94 long, 0,75 wide, 0,41 high, cephalic region with lateral rows in addition to median row of elongate setae; clypeus 0,17 high. Ocular area 0,47 wide, 0,22 long, ocular quadrangle rectangular; distance AME–AME ½ AME diameter, AME–ALE ⅔ AME, PME–PME nearly PME diameter, PME–PLE 1½ PME; ratio of eyes AM:AL:PM:PL, 1,33:1,25:1,00:1,08, diameter PME 0,06. Chelicerae 0,33 long, length 1,76 times height clypeus; sternum 0,53 long, 0,56 wide; labium narrow, 0,13 long, 0,18 wide; palpal coxa 0,20 long, 0,13 wide.

Legs slender, with elongate setae on all surfaces (Fig. 1), femur I 1,40 times carapace length; leg measurements:

	I	II	III	IV	Palpus
Femur	1,31	1,02	0,75	1,02	0,35
Patella	0,27	0,27	0,22	0,22	0,10
Tibia	1,41	0,94	0,76	0,82	0,18
Metatarsus	1,08	0,75	0,49	0,61	—
Tarsus	0,67	0,55	0,43	0,43	0,31
Total	4,74	3,53	2,65	3,10	0,94

Abdomen 1,31 long, 1,16 wide, 1,25 high. Epigynum as in Figs 39–41; atrium narrow, width 1,65 times length; scape simple, broad. Spermathecae not examined in unique type specimen.

Male: Unknown.

Distribution: Known only from the type locality in the western Karoo, South Africa.

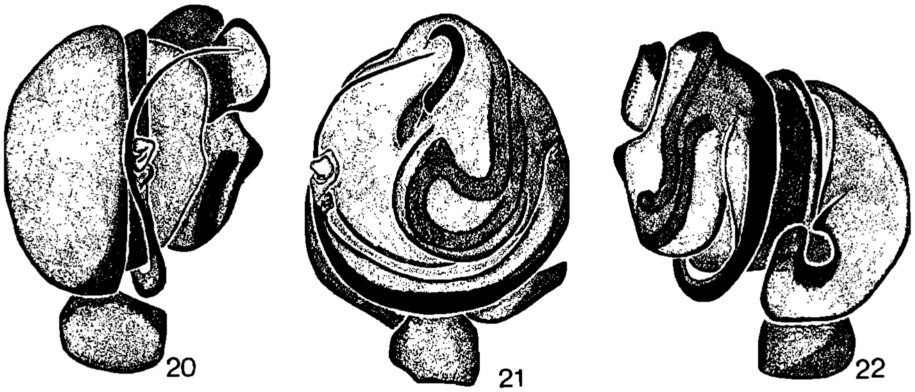
Material examined: SOUTH AFRICA: *Cape:* Matjiesfontein, ♀ (type 16724, MNHN).

Cyatholipus quadrimaculatus Simon

Figs 3, 4, 7, 20–23, 25, 27, 42–44, 54

Cyatholipus quadrimaculatus Simon, 1894:713 (lectotype ♂, here designated, and paralectotypes, ♀, 2 ♂, from Cape of Good Hope, South Africa, MNHN). Roewer, 1942:968. Bonnet, 1956:1296.
Moero quadrimaculata O. P. Cambridge, 1903:157 (cotypes, ♂ ♀, Table Mountain, South Africa, UMO). Roewer, 1942:457.

Synonymy: The types of *quadrimaculatus* Simon, 1894, and *quadrimaculata* O. P. Cambridge, 1903, have been examined and found alike in all details, confirming the synonymy proposed by Petrunkevitch (1928:233). While *quadrimaculata* O. P. Cambridge is a secondary junior homonym, it should only be cited in synonymy, and therefore no replacement name is provided.

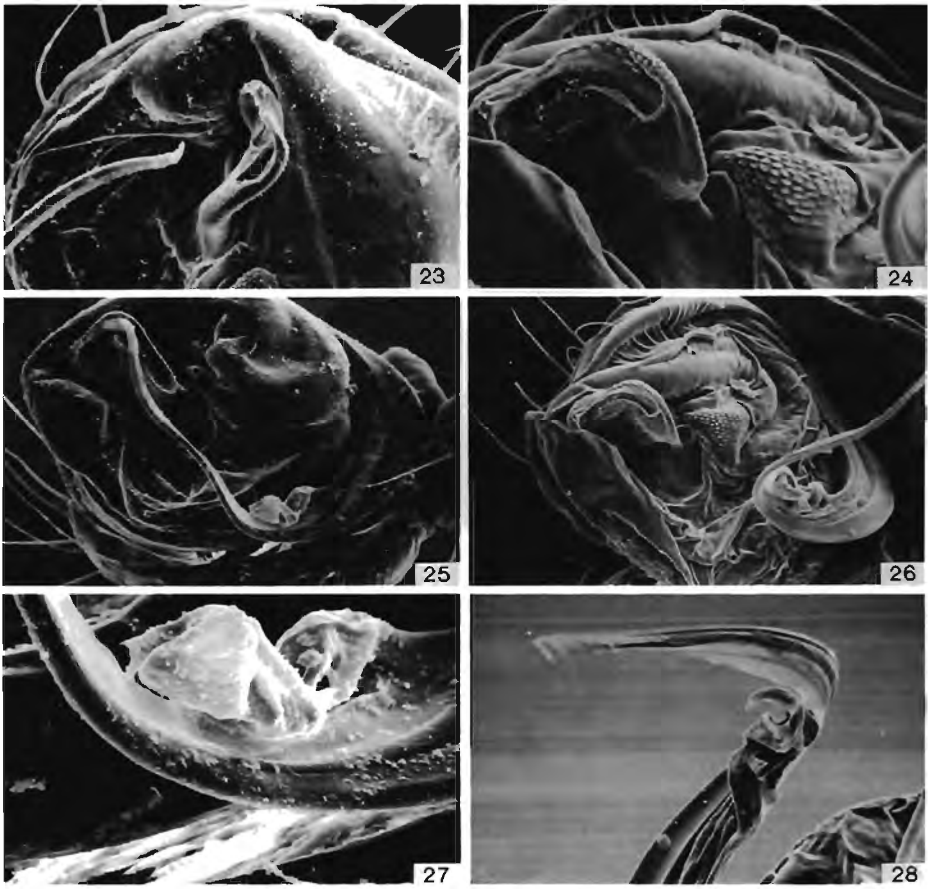


Figs 20–22. *Cyatholipus quadrimaculatus* Simon, ♂, l. palpal tibia and tarsus. 20. Anterolateral. 21. Ventral. 22. Retrolateral.

Diagnosis: Abdomen with 4 large dorsolateral black spots and 1 small, lateral mark or spot (Figs 3–4); epigynum broad, width atrium 1,58 times length, scape narrow (Fig. 42); ♂ palpus with median tegular protuberance low, denticulate (Fig. 25), median apophysis crescentic (Fig. 21), and parembolic process broad, folded (Fig. 27).

Male (lectotype): Total length 1,59. Carapace (Fig. 4) orange-brown, black around AME extending posteriad to PME and along inner margin of lateral eyes; mouthparts, venter of prosoma, legs and palpus yellow-brown, unmarked. Abdomen (Figs 3, 4) white, 4 large dorsolateral black spots and small, lateral dark mark, sclerotisation weak above pedicle, otherwise normal.

Carapace 0,76 long, 0,67 wide, 0,31 high; clypeus 0,21 high. Ocular area 0,40 wide, 0,19 long, ocular quadrangle narrowed in front; distance AME–AME $\frac{1}{4}$ AME diameter, AME–ALE $\frac{4}{5}$ AME, PME–PME $\frac{3}{4}$ PME, PME–PLE equal to PME; ratio of eyes AM:AL:PM:PL, 1,14:1,07:1,00:1,14, diameter PME 0,07.



Figs 23–28. *Cyatholipus* spp., ♂ palpi. 23, 25, 27. *C. quadrimaculatus* Simon. 24, 26, 28. *C. avus* sp. n. 23. Apex of bulb with median apophysis, 245 ×. 24. Median apophysis and median tegular protuberance, 370 ×. 25. Venter, 173 ×. 26. Venter, 177 ×. 27, 28. Parembolic process. 27. 757 ×. 28. 372 ×.

Chelicerae 0,26 long, length 1,26 times clypeus height; sternum 0,37 long, 0,49 wide; labium broad, 0,10 long, 0,16 wide; palpal coxa 0,16 long, 0,12 wide.

Legs fairly short, with few elongate setae, femur I 1,03 times carapace length; leg measurements:

	I	II	III	IV	Palpus
Femur	0,78	0,69	0,51	0,67	0,22
Patella	0,22	0,22	0,20	0,22	0,10
Tibia	0,67	0,59	0,39	0,51	0,10
Metatarsus	0,53	0,47	0,37	0,41	—
Tarsus	0,46	0,45	0,35	0,39	0,27
Total	2,66	2,42	1,82	2,20	0,69

Abdomen 0,86 long, 0,84 wide, 0,94 high.

Palpus with paracymbial notch as in Fig. 22. Bulb (Figs 20–22, 25) with apical lobe low, median apophysis crescentic (Fig. 23), median tegular protuberance low, with pustulate patch (Fig. 21); parembolic process broad, folded (Figs 21, 27).

Variation: Total length 1,55–1,59. Legs may shade to slightly darker distally on femora-tarsi. PER 1,00–1,06 times AER, OQP 1,06–1,14 times OQA; distance PME–PLE 1,07–1,33 PME diameter; height clypeus 2,57–2,63 AME diameter; length chelicerae 1,24–1,50 clypeus height; length sternum 0,76–0,89 width; length palpal coxa 1,33–1,70 times width; femur I 0,90–1,03 times carapace length.

Female (paralectotype): Total length 1,88. Markings as in ♂ except lateral spot on abdomen minute, absent from one side; legs yellow-brown shading to slightly darker from distal ⅓ femora-tarsi. Structure as in ♂.

Carapace 0,80 long, 0,63 wide, 0,29 high; clypeus 0,16 high, height 2,29 times AME diameter. Ocular area 0,38 wide, 0,16 long; ratio of eyes AM:AL:PM:PL, 1,40:1,40:1,00:1,40, diameter PME 0,05. Chelicerae 0,26 long, length 1,81 times clypeal height; sternum 0,40 long, 0,44 wide; labium 0,11 long, 0,18 wide; palpal coxae 0,16 long, 0,13 wide.

Femur I 0,90 carapace length; leg measurements:

	I	II	III	IV	Palpus
Femur	0,73	0,64	0,49	0,65	0,18
Patella	0,23	0,20	0,19	0,20	0,08
Tibia	0,59	0,53	0,37	0,49	0,14
Metatarsus	0,49	0,41	0,33	0,39	—
Tarsus	0,43	0,41	0,33	0,39	0,25
Total	2,47	2,19	1,71	2,12	0,65

Abdomen 1,12 long, 0,98 wide, 0,94 high. Epigynum (Figs 42–44) with atrium broad, width 1,58 times length, scape simple, narrow, attenuate at base. Spermathecae (*quadrimaculata* O. P. Cambridge cotype) as in Fig. 54.

Distribution: Cape of Good Hope, near Cape Town, South Africa.

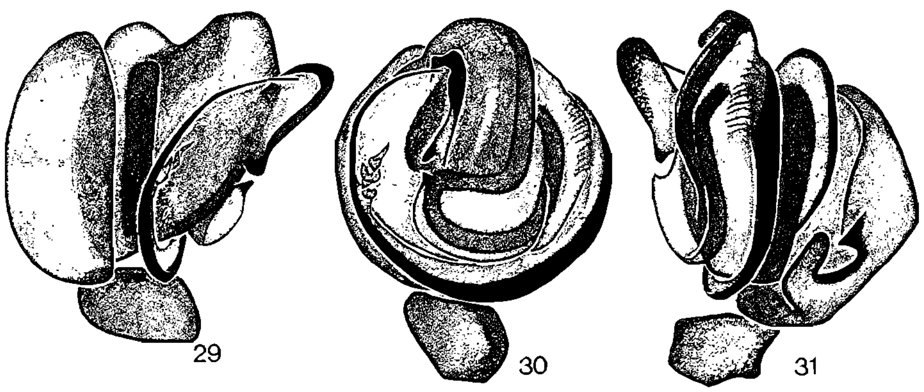
Material examined: SOUTH AFRICA: *Cape:* Cape of Good Hope, 3 ♂, ♀ (*quadrimaculatus* Simon, lectotype, paralectotypes, 16581, MNHN); Platteklip Gorge, Table Mountain, ♂ ♀ (*quadrimaculata* O. P. Cambridge, cotypes, UMO).

Cyatholipus tortilis sp. n.

Figs 6, 29–35

Etymology: L. *tortus*, to twist, referring to the shape of the parembolic process.

Diagnosis: Abdomen white, unmarked except for typical sclerotisations and small,



Figs 29–31. *Cyatholipus tortilis* sp. n., ♂ l. palpus, tibia and tarsus. 29. Anterolateral. 30. Ventral. 31. Retrolateral.

ventral black spot; tegulum with median flange (Figs 31, 34); parembolic process slender, twisted (Fig. 35).

Male (holotype): Total length 1,76. Prosoma orange-brown, unmarked except for black along inner margins of lateral eyes and PME, and surrounding and between AME. Coxae, trochanters, and legs orange-brown, shading to dusky on patellae-tarsi. Abdomen white, sclerotisations typical, not sclerotised dorsad of pedicle, venter with small black spot at anterior margin of tracheal furrow (Fig. 6).

Carapace 0,88 long, 0,75 wide, 0,43 high; clypeus 0,21 high, height 2,63 times AME diameter. Ocular area 0,40 wide, 0,17 long, ocular quadrangle rectangular; distance AME–AME ¼ AME diameter, AME–ALE ⅔ AME, PME–PME ½ PME, PME–PLE nearly equal to PME; ratio of eyes AM:AL:PM:PL, 1,23:1,08:1,00;1,15, diameter PME 0,07. Chelicerae 0,42 long, twice clypeal height; sternum 0,41 long, 0,51 wide; labium 0,11 long, 0,19 wide; palpal coxae 0,13 long, 0,11 wide.

Legs fairly short, with few elongate setae, femur I 0,93 carapace length; leg measurements:

	I	II	III	IV	Palpus
Femur	0,82	0,76	0,57	0,76	0,24
Patella	0,22	0,22	0,20	0,22	0,10
Tibia	0,75	0,63	0,43	0,59	0,12
Metatarsus	0,67	0,59	0,41	0,53	—
Tarsus	0,55	0,51	0,39	0,41	0,29
Total	3,01	2,71	2,00	2,51	0,75

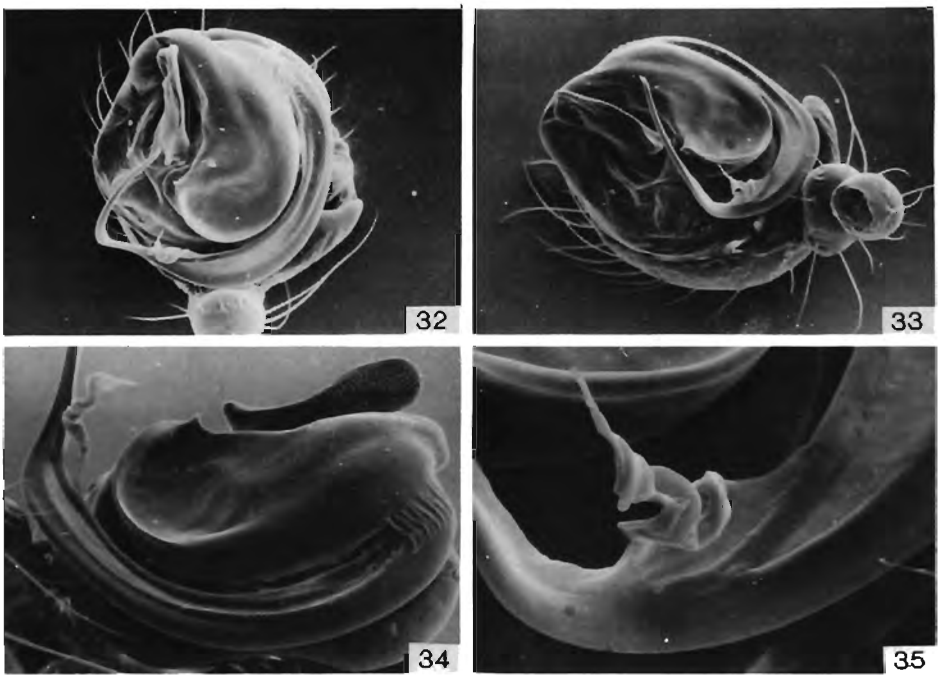
Abdomen 1,09 long, 0,98 wide, 0,43 high.

Palpus with paracymbial notch as in Fig. 31. Bulb with apical lobe prominent (Fig. 30); median apophysis large, nearly straight (Fig. 32); median tegular protuberance produced into a raised flange (Figs 31, 34), apex acute; parembolic process slender, twisted (Figs 29, 35).

Female: Unknown.

Distribution: Drakensberg Mountains, South Africa.

Material examined: SOUTH AFRICA: *Natal:* Cathedral Peak Forest Station,



Figs 32–35. *Cyatholipus tortilis* sp. n., ♂ palpus. 32. Ventral, 113×. 33. Anterolateral, 108×. 34. Retrobasal, showing raised tegular flange and median apophysis, 183×. 35. Parembolic process, 516×.

Meteorology Station, 75 km WSW Estcourt, Little Berg, 1860 m; 'malaise trough, veld' ♂ (holotype, NM 3517) 21–31.xii.1979, S. & J. Peck, deposited in NM, courtesy of AMNH.

Cyatholipus avus sp. n.

Figs 24, 26, 28, 36–38, 45–47, 55

Etymology: L. *avus*, a grandfather.

Diagnosis: Abdomen with pair of posterolateral black spots and ventral spot; epigynum (Figs 45–47) with scape narrow, simple, without anterior transverse ridge; atrium narrow, width 1,40 times length; ♂ palpus with median tegular protuberance low, pustulate (Fig. 24), median apophysis crescentic (Fig. 37), parembolic process slender, convoluted (Fig. 28).

Male (holotype): Total length 1,96. Slightly teneral, prosoma yellow-white, unmarked except for black surrounding each PME, along inner margin of lateral eyes, and around and between AME. Coxae, trochanters, and legs yellow-white, dusky from distal ⅓ of femora to tarsi. Abdomen white, with 1 pair of posterolateral black spots and dark spot on venter along anterior margin of tracheal furrow; sclerotisation typical, weakly sclerotised dorsad of pedicle.

Carapace 1,08 long, 0,71 wide, 0,43 high; clypeus 0,20 high, height 3,33 times diameter AME. Ocular area 0,40 wide, 0,18 long, ocular quadrangle narrowed in front; distance AME–AME ½ AME diameter, AME–ALE 1⅓ AME, PME–PME ⅔

PME diameter, PME–PLE 1⅓ PME; ratio of eyes AM:AL:PM:PL, 1,00:1,00:1,00:1,08, diameter PME 0,06. Chelicerae 0,33 long, 1,65 times clypeus height; sternum 0,44 long, 0,48 wide; labium 0,10 long, 0,17 wide; palpal coxae 0,16 long, 0,12 wide.

Legs fairly short, with few elongate setae, femur I 0,78 carapace length; leg measurements:

	I	II	III	IV	Palpus
Femur	0,84	0,76	0,57	0,75	0,24
Patella	0,22	0,22	0,22	0,20	0,10
Tibia	0,78	0,63	0,45	0,57	0,08
Metatarsus	0,63	0,57	0,41	0,49	—
Tarsus	0,47	0,43	0,37	0,43	0,27
Total	2,94	2,61	2,02	2,44	0,69

Abdomen 0,98 long, 0,92 wide, 1,14 high.

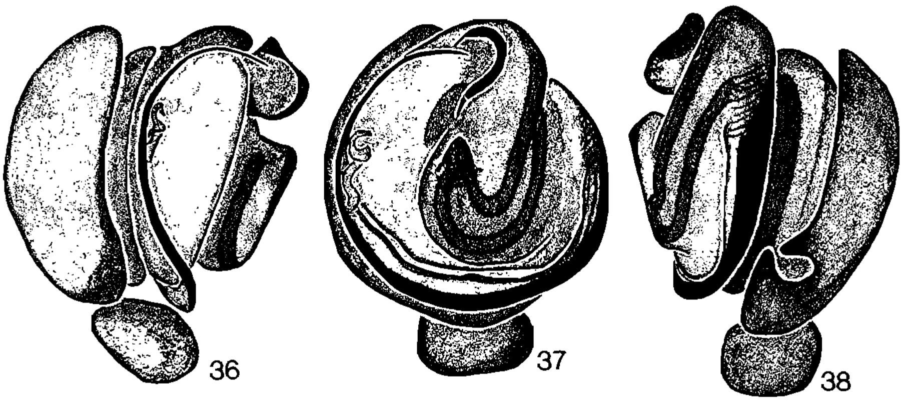
Palpus with paracymbial notch as in Fig. 38. Bulb with apical lobe low (Fig. 36); median apophysis crescentic (Fig. 24); median tegular protuberance low, with pustulate patch (Fig. 37); parembolic process slender, convoluted (Fig. 28).

Female (paratype): Total length 2,04. Markings as in ♂ except yellow-white areas in ♂ are orange-brown in ♀. Structure essentially as in ♂.

Carapace 0,84 long, 0,69 wide, 0,31 high; clypeus 0,11 high, height 1,57 times AME diameter. Ocular area 0,40 wide, 0,18 long, ocular quadrangle rectangular; distance AME–AME ⅓ AME diameter, AME–ALE ¾ AME, PME–PME ½ PME, PME–PLE 1⅕ PME; ratio of eyes AM:AL:PM:PL, 1,07:1,00:1,07:1,23, diameter PME 0,07. Chelicerae 0,35 long, 3,18 times clypeus height; sternum 0,43 long, 0,51 wide; labium 0,10 long, 0,17 wide; palpal coxae 0,15 long, 0,13 wide.

Femur I 0,84 carapace length; leg measurements:

	I	II	III	IV	Palpus
Femur	0,82	0,75	0,57	0,75	0,22
Patella	0,22	0,24	0,20	0,22	0,10
Tibia	0,69	0,61	0,41	0,55	0,14
Metatarsus	0,59	0,55	0,41	0,47	—
Tarsus	0,55	0,47	0,39	0,39	0,25
Total	2,87	2,62	1,98	2,38	0,71



Figs 36–38. *Cyatholipus avus* sp. n., l. ♂ palpus, tibia and tarsus. 36. Anterolateral. 37. Ventral. 38. Retrolateral.

Abdomen 1,31 long, 1,22 wide, 1,41 high. Epigynum (Figs 45–47) with atrium narrow, width 1,40 times length, scape short, simple, narrow. Spermathecae as in Fig. 55.

Distribution: Grootvadersbosch Forest (Grandfather's Forest) in the southwestern Cape, South Africa.

Material examined: SOUTH AFRICA: *Cape:* Grootvadersbosch For. Sta., 20 km WNW Heidelberg (34°00'S;20°47'E), el. 1600 ft., indigenous forest, (♂ holotype and paratype ♀, NM type number 3389), 8–10.xi.1985, C. Griswold, J. Doyen & T. Meikle Griswold, deposited in NM.

Cyatholipus icubatus sp. n.

Figs 5, 48–50, 56

Etymology: Zulu *ikhuba*, a hoe, referring to the shape of the anterior transverse ridge on the epigynal scape.

Diagnosis: Sternum with posterior median dark spot; abdomen (Fig. 5) with 1 ventral and 2 pairs of dorsolateral black spots; epigynal scape with anterior transverse ridge (Fig. 48), narrow in posterior view (Fig. 49), height 0,80 width.

Female: Total length 2,29. Prosoma yellow-brown; ocular area black on inner margin of lateral eyes, surrounding AME and PME, and dark between AER and PER; sternum with posteromedian dark spot. Coxae, trochanters and legs yellow-brown, femur IV dark ventrally at base, legs shading to brown on distal ⅓ of femora-tarsi, palpus uniformly yellow-brown. Abdomen white with 2 pairs of dorsolateral black spots, venter with transverse black mark on anterior margin of tracheal furrow; with typical sclerotisations, not sclerotised dorsad of pedicle.

Carapace 0,86 long, 0,78 wide, 0,37 high; clypeus 0,16 high, height twice diameter AME. Ocular area 0,43 wide, 0,20 long, ocular quadrangle narrowed in front; distance AME–AME ¼ AME diameter, AME–ALE ⅘ AME, PME–PME ⅔ PME, PME–PLE ⅘ PME; ratio of eyes AM:AL:PM:PL, 1,14:1,14:1,00:1,29, PME diameter 0,07. Chelicerae 0,34 long, 2,13 times clypeal height; sternum 0,47 long, 0,53 wide; labium 0,11 long, 0,19 wide; palpal coxae broad, 0,15 long, 0,14 wide.

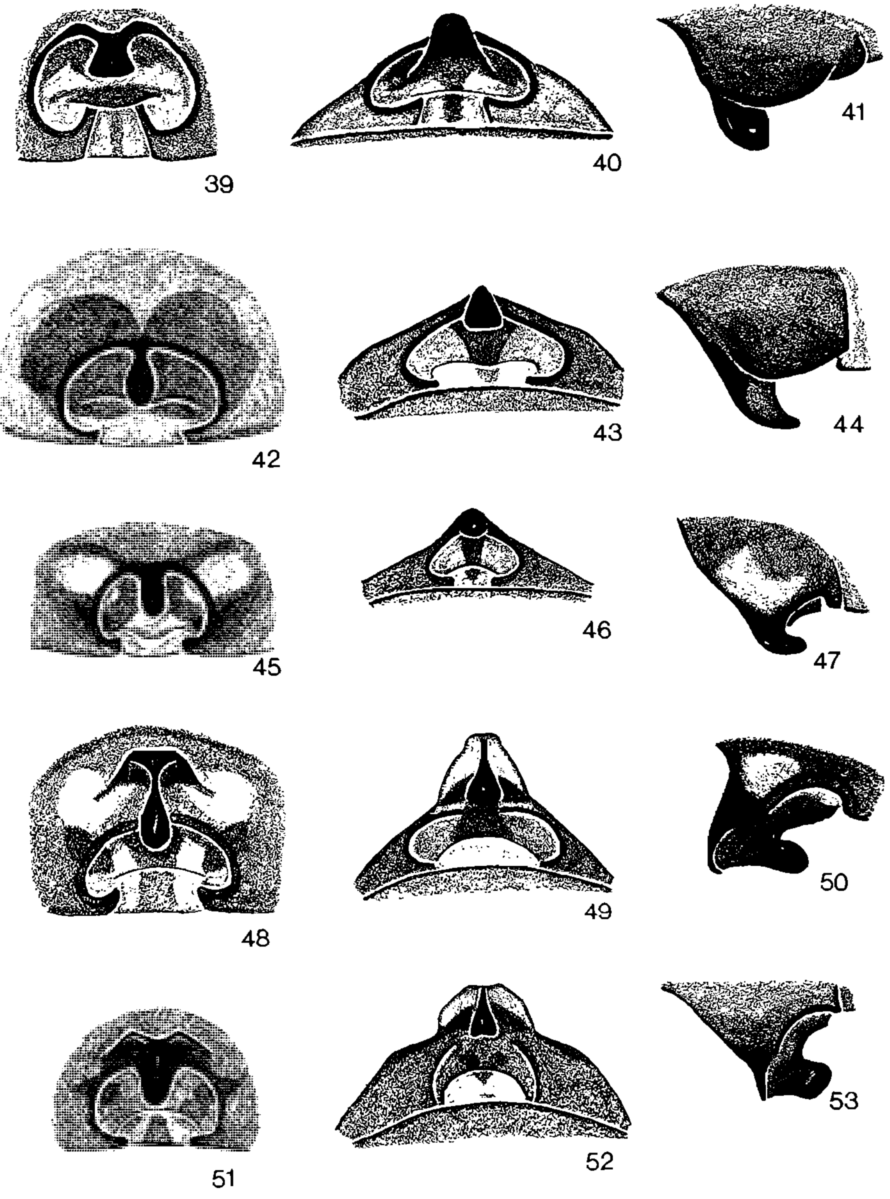
Legs fairly short, with few elongate setae, femur I 0,93 carapace length; leg measurements:

	I	II	III	IV	Palpus
Femur	0,80	0,73	0,59	0,75	0,24
Patella	0,24	0,24	0,22	0,22	0,08
Tibia	0,67	0,59	0,43	0,57	0,14
Metatarsus	0,59	0,53	0,41	0,51	—
Tarsus	0,51	0,49	0,37	0,37	0,25
Total	2,81	2,58	2,02	2,42	0,71

Abdomen 1,47 long, 1,37 wide, 1,53 high. Epigynum (Figs 48–50) with atrium broad, width 1,70 times length; scape narrow, attenuate near base, with narrow anterior, transverse ridge, height ridge 0,80 width. Spermathecae as in Fig. 56.

Male: Unknown.

Distribution: Dlinza Forest, Zululand.



Figs 39–53. *Cyatholipus* spp., epigyna. 39–41. *C. hirsutissimus* Simon. 42–44. *C. quadrimaculatus* Simon. 45–47. *C. avus* sp. n. 48–50. *C. icubatus* sp. n. 51–53. *C. isolatus* sp. n. 39, 42, 45, 48, 51. Ventral. 40, 43, 46, 49, 52. Posterior. 41, 44, 47, 50, 53. Lateral.

Material examined: SOUTH AFRICA: *Natal:* Dlinza Forest, Eshowe, el. 1800 ft. (28°53'S;31°28'E), berlese ex leaf-litter, ♂ (holotype, NM type number 3390), 21.i.1984, C. E. Griswold, deposited in NM.

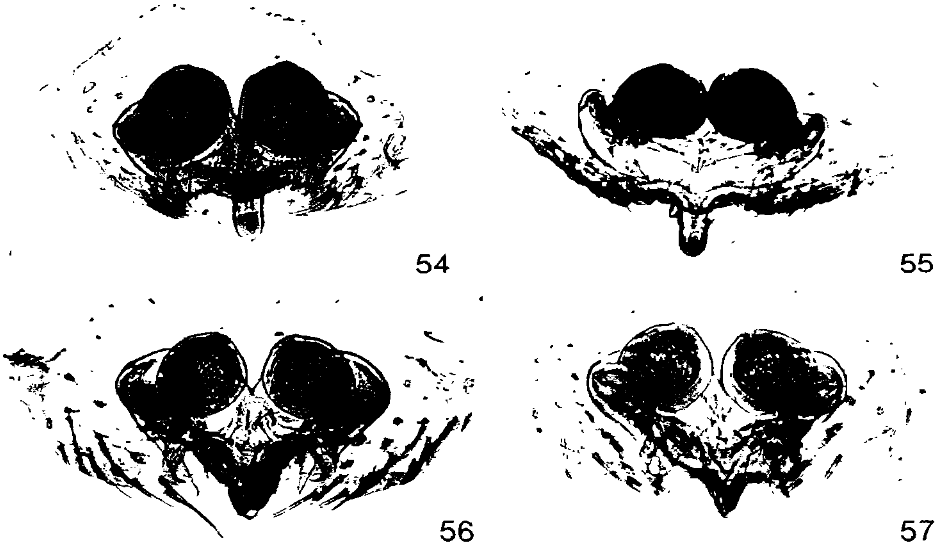
Cyatholipus isolatus sp. n.

Figs 51–53, 57

Etymology: L. separate, isolated.

Diagnosis: Abdomen white, unmarked except for a pair of small, dorsolateral black spots; epigynal scape with anterior, transverse ridge (Figs 51, 53), broad in posterior view (Fig. 52), height 0,50 width.

Female: Total length 1,92. Prosoma, legs and palpi orange-brown, unmarked except for black along inner margin of lateral eyes, anterior margin of PME, surrounding AME and extending posteriad to PER. Abdomen white, with 1 pair of small, dorsolateral black spots; sclerotisations typical, and sclerotised dorsad of pedicle.



Figs 54–57. *Cyatholipus* spp., spermathecae, cleared, dorsal. 54. *C. quadrimaculatus* Simon. 55. *C. avus* sp. n. 56. *C.icubatus* sp. n. 57. *C. isolatus* sp. n.

Carapace 0,90 long, 0,75 wide, 0,37 high; clypeus 0,16 high, height 1,89 times AME diameter. Ocular area 0,44 wide, 0,21 long, ocular quadrangle slightly narrowed behind; distance AME–AME ¼ AME diameter, AME–ALE ½ AME, PME–PME ½ PME, PME–PLE nearly equal to PME; ratio of eyes AM:AL:PM:PL, 1,20:1,07:1,00:1,07, diameter PME 0,08. Chelicerae 0,31 long, length 1,82 times height clypeus; sternum 0,45 long, 0,52 wide; labium 0,12 long, 0,20 wide; palpal coxae 0,16 long, 0,12 wide.

Legs fairly short, with few elongate setae, femur I 0,87 carapace length; leg measurements:

	I	II	III	IV	Palpus
Femur	0,80	0,76	0,63	0,80	0,22
Patella	0,24	0,22	0,22	0,22	0,09
Tibia	0,69	0,61	0,42	0,61	0,14
Metatarsus	0,61	0,55	0,43	0,51	—
Tarsus	0,47	0,49	0,39	0,39	0,27
Total	2,81	2,63	2,09	2,53	0,72

Abdomen 1,16 long, 0,98 wide, 1,14 high. Epigynum (Figs 51–53) with atrium narrow, width 1,53 times length; scape broad, with broad anterior transverse ridge, height ridge 0,53 width. Spermathecae as in Fig. 57.

Male: Unknown.

Distribution: Soutpansberg Mountains in the far north of South Africa.

Material examined: SOUTH AFRICA: *Transvaal:* Central Soutpansberg, Hanglip For. Res. (23°00'S;29°47'E), sifted, 'easily pulling bark of alive tree', ♀ (holotype), 18.iii.1973, S. Endrödy-Younga, deposited in TM.

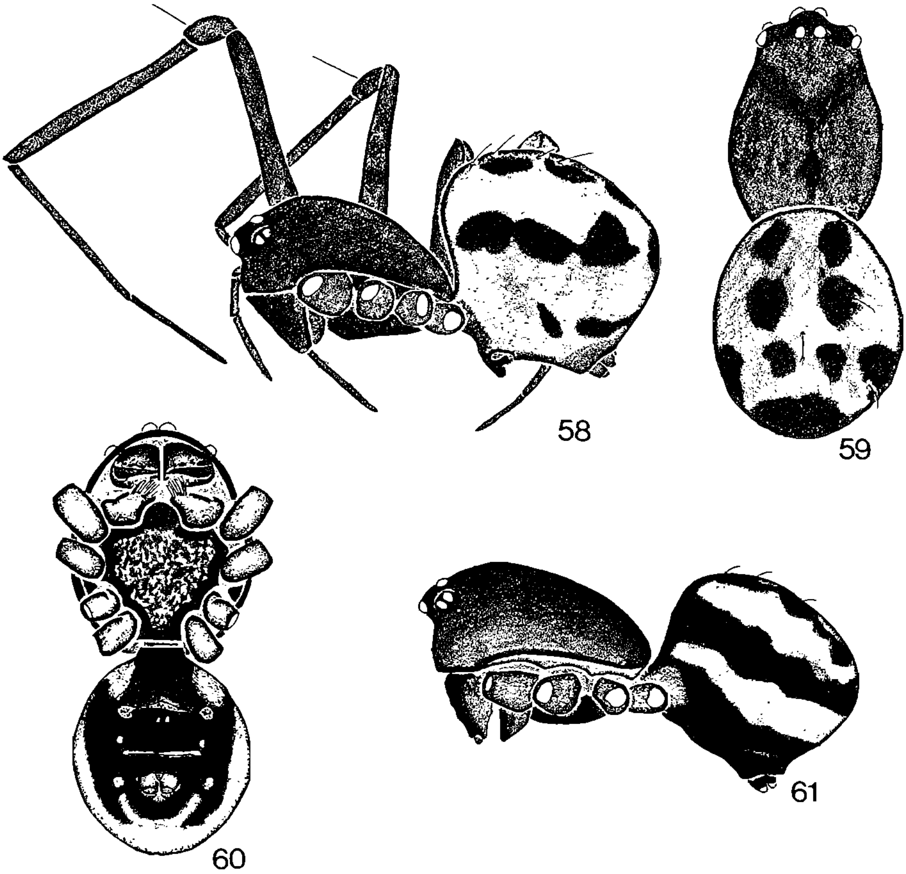
Ilisoa gen. n.

Type species: *Ilisoa knysna* sp. n.

Etymology: Xhosa *iliso*, a small, shiny bead. Gender feminine.

Diagnosis: Carapace domed (Figs 58, 61), highest behind OA; thoracic fovea a deep, longitudinal pit (Fig. 59); PME widely separated from PLE (Fig. 59), distance greater than twice PME diameter; abdomen ovoid, with dorsal and dorsolateral rows of slender bristles (Figs 58–59); paracymbial notch with upper lobe much larger than lower (Fig. 64); palpal bulb with median apophysis simple, narrow, median (Figs 63, 67), embolus without parembolic process (Fig. 62); epigynum with atrial depression extending anteriad of scape (Fig. 69); spermathecae with anterior, membranous bursal ducts (Fig. 114).

Description: Carapace domed, highest behind OA, height greater than 0,30 length, weakly rugose, length 1,35–1,45 times width; thoracic fovea a deep, longitudinal pit. Ocular area 2,40–2,65 times wider than long, AER strongly recurved, PER nearly straight, OQP less than or equal to OQA: AME separated by $\frac{1}{4}$ diameter, separated from ALE by 1,10–1,70 diameter; PME separated by $\frac{1}{2}$–$\frac{3}{4}$ diameter, separated from PLE by more than twice diameter, lateral eyes contiguous (Figs 58, 61). Clypeus weakly convex, height greater than 2,50 times diameter AME; margin of cheliceral fang furrow with 4 large promarginal and 3 minute retromarginal teeth. Sternum wider than long (Fig. 60), deeply rugose; labium about 1,50–1,60 times wider than long; palpal coxa 1,50 times longer than wide. Legs slender (Fig. 58), femur I about equal to carapace length, formula 1243. Abdomen ovoid (Figs 58–61), height $\frac{3}{4}$ to equal to length; sparsely covered with fine setae and with dorsal and dorsolateral rows of slender bristles; strong sclerotisation from epigastric furrow to pedicle, and weak sclerotisation around spinnerets. Epigynum (Fig. 69) with atrial depression surrounding and extending anteriad of broad scape, posteromedian lobe prominent (Fig. 70); spermathecae with anterior, mem-



Figs 58–61. *Ilisoa* spp. 58, 59. *I. hawequas* sp. n., ♀. 60, 61. *I. knysna* sp. n., ♂. 58, 61. Lateral. 59. Dorsal. 60, Ventral.

branous bursal ducts. ♂ palpus with upper lobe of paracymbial notch enlarged (Fig. 64), bulb with median apophysis simple, median, embolus without parembolic process.

Ilisoa knysna sp. n.

Figs 15, 60–68

Etymology: A noun in apposition from the type-locality.

Diagnosis: By the characters of the genus and details of the palpal organ (Figs 62–68); distinguished from *hawequas* sp. n. by the abdominal markings (Fig. 61).

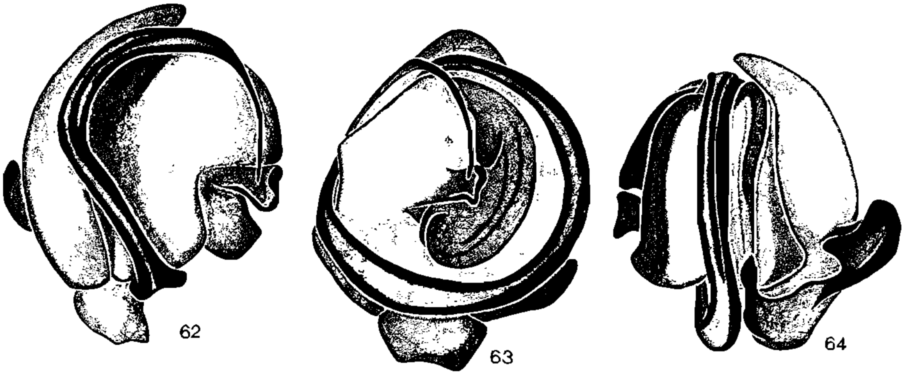
Male (holotype): Total length 2,24. Carapace dark red-brown, black around each eye and between AME, chelicerae, sternum, labium and palpal coxae red-brown. Coxae and legs pale yellow-white, unmarked, cymbium yellow-brown, paracymbial process dark. Abdomen (Figs 60–61) yellow-white, with paired dorsal longitudinal black bands and median encircling black band, pale areas with sinuous white deposits, venter black posteriad of epigastric furrow to around spinnerets, mottled brown anterior to epigastric furrow (Fig. 60).

Carapace 1,18 long, 0,86 wide, 0,45 high, with sparse, fine setae between PER and fovea; clypeus 0,28 high, height 3,50 times diameter AME. Ocular area 0,53 wide, 0,20 long; ratio of eyes AM:AL:PM:PL, 1,33:1,33:1,00:1,17, diameter PME 0,06. Chelicerae 0,45 long, with median subbasal bristle and scattered setae. Sternum 0,52 long, 0,54 wide; labium 0,11 long, 0,18 wide; palpal coxae 0,22 long, 0,14 wide.

Legs sparsely covered with slender hairs; measurements:

	I	II	III	IV	Palpus
Femur	1,12	0,94	0,63	0,78	0,37
Patella	0,25	0,25	0,22	0,22	0,14
Tibia	1,14	0,92	0,49	0,67	0,12
Metatarsus	0,96	0,75	0,47	0,57	—
Tarsus	0,59	0,53	0,37	0,39	0,49
Total	4,06	3,39	2,18	2,63	1,12

Abdomen 1,00 long, 0,86 wide, 0,96 high, extending posteriad of spinnerets for 0,31 length.



Figs 62–64. *Ilisoa knysna* sp. n., l. ♂ palpus, tibia and tarsus. 62. Anterolateral. 63. Ventral. 64. Retrolateral.

Palpus with upper lobe of paracymbial notch greatly enlarged and directed dorsoapically (Figs 64, 66). Bulb large, embolus extending beyond cymbial margin laterally (Figs 62, 65), lacking parembolic process; tegulum swollen anteromedially (Fig. 63); apical lobe prominent, smooth; median apophysis median, simple, slender, slightly expanded and infolded distally (Fig. 67), ventral margin serrate (Fig. 68); median tegular protuberance prominent, with small denticulate patch.

Female: Unknown.

Distribution: Knysna forest, southern Cape Province, South Africa.

Material examined: SOUTH AFRICA: *Cape:* Diepwalle Forest Station, 22 km NE Knysna (33°57'S;23°10'E), el. 1800 ft., indigenous forest, holotype ♂ (NM type 3382), 11–13.xi.1985, C. Griswold, J. Doyen & T. Meikle Griswold, deposited in NM.

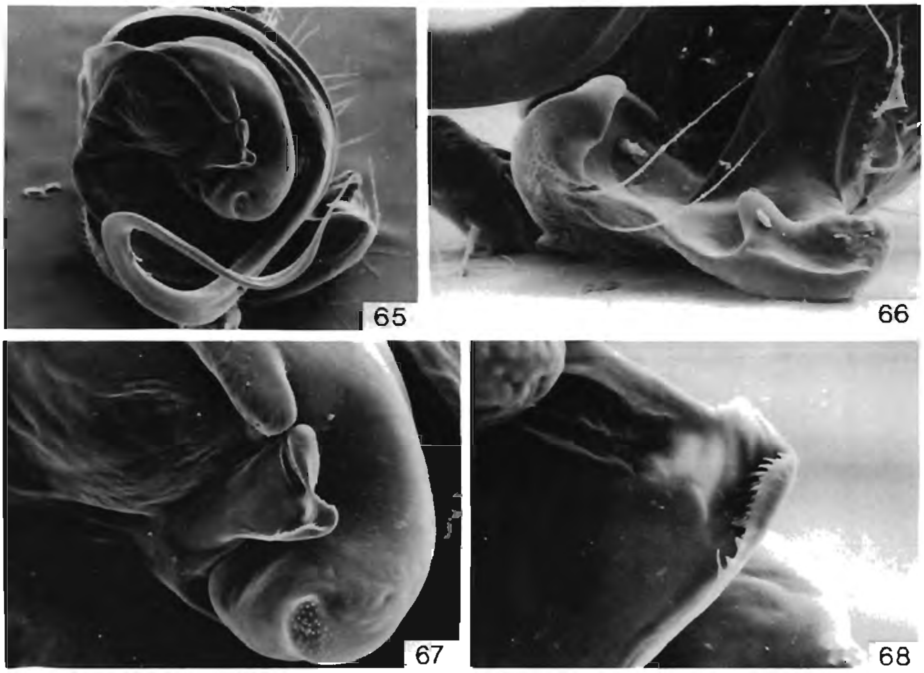
Ilisoa hawequas sp. n.

Figs 58–59, 69–71, 114

Etymology: A noun in apposition after the type-locality.

Diagnosis: By the characters of the genus and details of epigynum (Figs 69–71) and spermathecae (Fig. 114); distinguished from *knysna* sp. n. by the abdominal markings (Figs 58–59).

Female (holotype): Total length 2,20. Carapace dark red-brown, black around each eye and between AME, chelicerae, sternum, labium, and palpal coxae red-brown, coxae, legs and palpi yellow-brown, unmarked. Abdomen (Figs 58–59) yellow-white, 3 pairs of dorsomedian white spots, lateral black band and posterior black spot, and 2 black spots laterad of spinnerets; venter with faint grey band between epigastric furrow and spinnerets.



Figs 65–68. *Ilisoa knysna* sp. n., l. ♂ palpus. 65. Ventral, 82 ×. 66. Paracymbial notch, retrolateral, 200 ×. 67. Centre of bulb with apical lobe, median apophysis, and denticulate median tegular protuberance, 197 ×. 68. Inside of median apophysis, 564 ×.

Carapace 1,14 long, 0,78 wide, 0,35 high, row of fine setae between PLE and fovea, and 2 setae in middle of ocular quadrangle; clypeus 0,22 high, height 2,44 times diameter AME. Ocular area 0,51 wide, 0,21 long; ratio of eyes AM:AL:PM:PL, 1,50:1,33:1,00:1,25, diameter PME 0,06. Chelicerae 0,39 long, with 2 median bristles and scattered setae; weak subbasal protuberance. Sternum 0,49 long, 0,58 wide; labium 0,12 long, 0,19 wide; palpal coxae 0,20 long, 0,13 wide.

Legs sparsely covered with slender hairs; measurements:

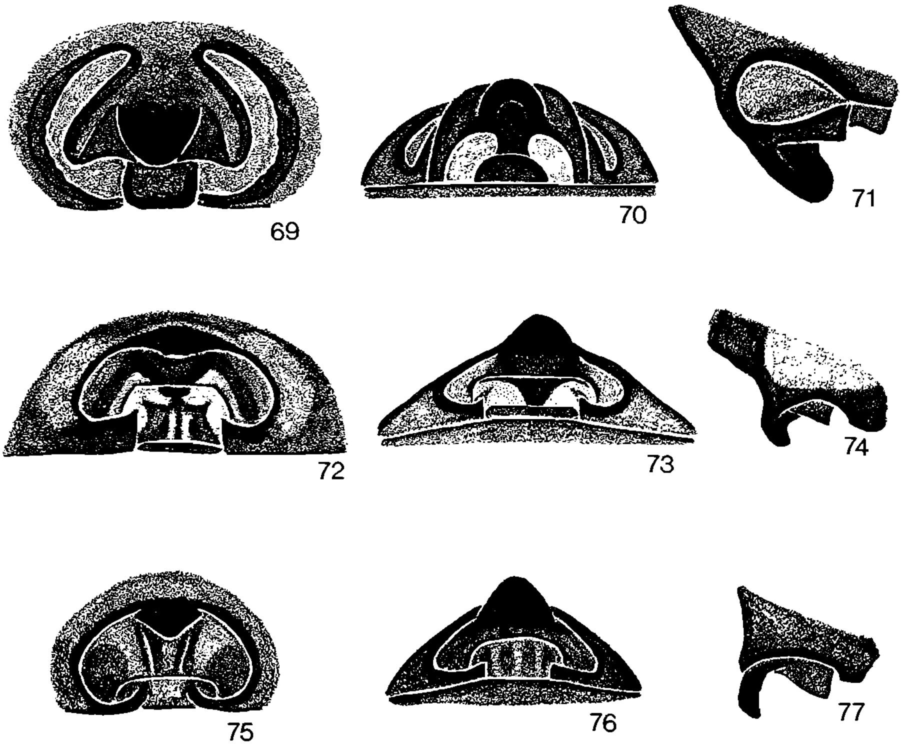
	I	II	III	IV	Palpus
Femur	1,18	0,98	0,69	0,82	0,27
Patella	0,29	0,25	0,22	0,24	0,12
Tibia	1,14	0,94	0,51	0,67	0,18
Metatarsus	0,92	0,75	0,47	0,59	—
Tarsus	0,59	0,53	0,37	0,41	0,39
Total	4,12	3,45	2,26	2,73	0,96

Abdomen 1,18 long, 1,12 wide, 0,94 high, extending posteriad of spinnerets for 0,08 length. Epigynum (Figs 69–71) 1,60 times wider than long; atrial depression extending around and anteriad of broad scape; copulatory openings paired; posteromedian lobe large. Spermathecae (Fig. 114) with copulatory pores leading ventrally into large, anterior membranous bursal ducts, these leading into small, dorsal, sclerotised receptacula.

Male: Unknown.

Distribution: Southwestern Cape Province, South Africa.

Material examined: SOUTH AFRICA: *Cape:* Hawequas, 33°34'S;19°08'E, sifted humus under dense undergrowth above waterfall, ♀ (holotype), 5.xi.1973, S. Endrödy-Younga, deposited in TM.



Figs 69–77. Cyatholipidae, epigyna. 69–71. *Ilisoa hawequas* sp. n. 72–74. *Isicabu reavelli* sp. n. 75–77. *Isicabu capensis* sp. n. 69, 72, 75. Ventral. 70, 73, 76. Posterior. 71, 74, 77. Lateral.

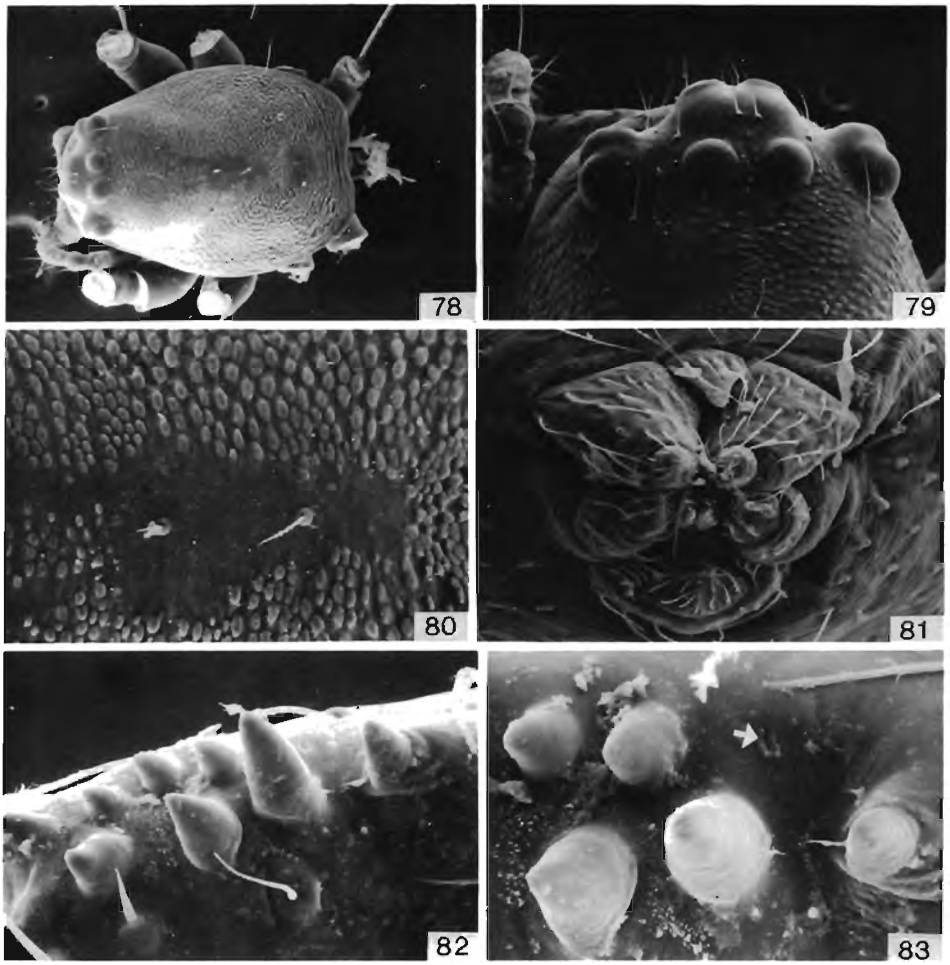
Isicabu gen. n.

Type species: *Isicabu reavelli* sp. n.

Etymology: Zulu *isicabucabu*, a spider. Gender masculine.

Diagnosis: Abdomen triangular, extended posteriad of spinnerets (Figs 87, 90–91), with scattered fine setae; male palpus with characteristic subapical, bipartite median apophysis (Figs 84, 93) consisting of expanded, cup-like distal portion and narrow proximal lobe, embolus with broad parembolic process (Figs 94, 108); epigynum narrow, less than 0,35 width abdomen, with simple anterior scape (Figs 72, 75); spermathecae with paired sclerotised receptacula (Figs 115–116), lacking voluminous membranous bursal ducts.

Description: Carapace inclined to weakly domed, height 0,26–0,36 length, narrow,



Figs 78–83. *Isicabu capensis* sp. n., ♀. 78. Carapace, dorsal, 36 ×. 79. Ocular area, dorsal, 91 ×. 80. Region of thoracic fovea with granulate sculpturing, 167 ×. 81. Spinnerets, 166 ×. 82. Cheliceral teeth, retromargin at top, 404 ×. 83. Fang furrow, arrow denotes presumed cheliceral gland opening, 741 ×.

length 1,44–1,82 times width; weakly rugose to granulate (Fig. 80); thoracic fovea a weak to deep ovoid pit. Ocular area 2,10–2,40 times wider than long, AER strongly recurved, PER nearly straight, OQP greater than or equal to OQA; AME separated by ⅕–⅓ diameter; PME separated by ½–⅔ diameter, separated from PLE by less than 1⅔ times diameter, lateral eyes nearly contiguous. Clypeus weakly convex, height greater than twice AME diameter; chelicera with weak to strong subbasal anterior projection, margin of fang furrow with 4 large promarginal and 3 small retromarginal teeth (Fig. 82). Sternum longer than wide (Fig. 89), strongly rugose; labium about 1,5 times wider than long; palpal coxa 1,30–2,20 times longer than wide. Legs slender (Fig. 87) to very elongate (Fig. 91), femur I 1,0–3,0 times length carapace; leg formula 1243. Abdomen triangular, extending beyond spinnerets for greater than ⅓ length, may be weakly sclerotised ventrally between epigastric furrow and pedicle; vestiture of scattered fine setae. Epigynum (Figs 72–77) with atrial depression narrow, less than 0,35 width abdomen, with simple anterior scape; posteromedian lobe reduced; spermathecae (Figs 115–116) with sclerotised ventral and dorsal receptacula, membranous bursal ducts absent, fertilisation duct anterodorsal. ♂ palpus with lobes of paracymbial notch slender, lower lobe slightly larger, apex proximad of upper (Figs 86, 104); bulb with well-developed apical lobe, pustulate (Figs 85, 106); median apophysis subapical, bipartite, with broadly lobate distal element and narrow proximal element (Fig. 93); median tegular protuberance prominent, with extensive denticulate band (Figs 95, 100); parembolic process broad, folded (Figs 94, 107).

Isicabu reavelli sp. n.

Figs 8, 14, 72–74, 84–89, 93–95, 115

Etymology: Named in honour of Patrick E. Reavell, collector of this species and many other interesting elements of the southern African forest cryptofauna.

Diagnosis: Distinguished from *capensis* sp. n. by having much shorter legs (femur I less than 1,15 times carapace length) (Fig. 87) and the embolic tip simple (Fig. 85), and from *zuluensis* sp. n. by having the femora and patellae with lateral dark maculations (Fig. 87) and by the markings of the abdomen (Fig. 88).

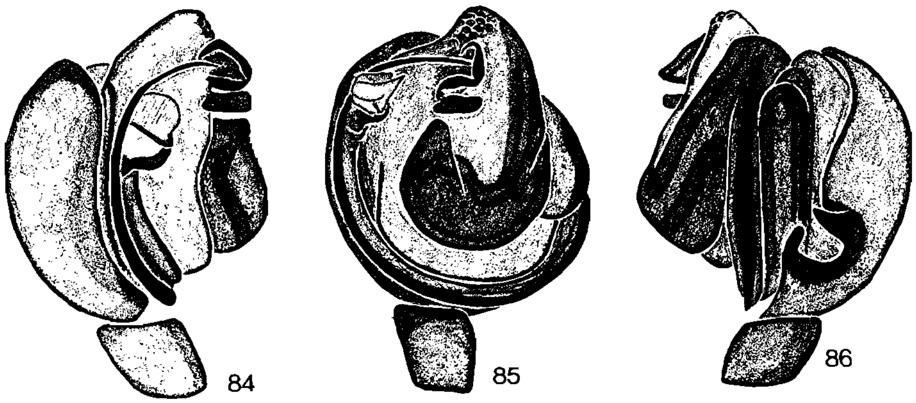
Male (holotype): Total length 2,16. Carapace yellow-brown, ocular area black, dark maculations radiating anteriorly, laterally, and posteriorly from fovea, and darkened along carapace margin; chelicerae, labium and palpal coxae red-brown, sternum black (Fig. 89). Coxae, legs, and palpi yellow-white shading to yellow-brown on tarsi and apices of metatarsi; femora with dark lateral bands on distal ⅔, patella with black lateral maculations. Abdomen white, with paired anterodorsal longitudinal black bands, dorsolateral ovoid black spots, and posterodorsal longitudinal black bands confluent apically; venter (Fig. 89) brown, sclerotised between epigastric furrow and pedicle, dark grey between epigastric furrow and spinnerets, black surrounding pedicle and posteriad of spinnerets.

Carapace low, inclined, 1,08 long, 0,69 wide, 0,35 high, row of fine setae behind lateral eyes and pair in median ocular quadrangle; thoracic fovea a shallow, broad pit; clypeus 0,17 high, height 2,27 times AME diameter. Ocular area 0,36 wide, 0,17 long; distance AME–ALE ⅔ AME diameter, PME–PME ½ PME, PME–PLE 1¼ PME; ratio of eyes AM:AL:PM:PL, 1,15:1,08:1,00:1,08, diameter PME 0,07. Chelicerae 0,41 long, with prominent anterior subbasal projection. Sternum 0,56 long, 0,51 wide; labium 0,12 long, 0,17 wide; palpal coxa narrow, 0,24 long, 0,11 wide.

Legs sparsely covered with long, slender hairs; femur I 1,13 times carapace length; leg measurements:

	I	II	III	IV	Palpus
Femur	1,22	1,08	0,69	0,94	0,33
Patella	0,27	0,25	0,22	0,25	0,10
Tibia	1,02	0,94	0,49	0,71	0,10
Metatarsus	0,98	0,88	0,47	0,65	—
Tarsus	0,57	0,55	0,35	0,39	0,33
Total	4,06	3,70	2,22	2,94	0,86

Abdomen 1,06 long, 0,69 wide, 0,67 high, extending posteriad of spinnerets for 0,33 length; venter between epigastric furrow and pedicle weakly sclerotised.



Figs 84–86. *Isicabu reavelli* sp. n., ♂, l. palpal tibia and tarsus. 84. Anterolateral. 85. Ventral. 86. Retrolateral.

Palpus with paracymbial notch as in Fig. 86. Bulb (Figs 84–86) with embolus tapering abruptly to tip (Fig. 93), apex simple; parembolic process large, broad, folded (Fig. 94); upper and lower articles of median apophysis of equal length (Fig. 84); median tegular protuberance forming a low ridge (Fig. 95).

Female (paratype): Total length 2,73. Markings as in ♂ except dorsum of abdomen entirely black and carapace markings more diffuse (Fig. 88). Structure essentially as in ♂

Carapace 1,18 long, 0,73 wide, 0,31 high; clypeus 0,16 high, height 2,29 times diameter AME. Ocular area 0,40 wide, 0,19 long; distance AME–ALE equal to AME diameter, PME–PLE less than PME; ratio of eyes AM:AL:PM:PL, 1,00:1,00:1,07:1,29, diameter PME 0,08. Chelicerae 0,43 long; sternum 0,64 long, 0,55 wide; labium 0,13 long, 0,17 wide; palpal coxae 0,24 long, 0,12 wide.

Femur I 1,08 times carapace length; leg measurements:

	I	II	III	IV	Palpus
Femur	1,27	1,18	0,76	1,02	0,31
Patella	0,29	0,25	0,24	0,24	0,10
Tibia	1,10	1,10	0,53	0,78	0,19
Metatarsus	1,08	0,94	0,55	0,75	—
Tarsus	0,61	0,63	0,39	0,45	0,25
Total	4,35	4,10	2,47	3,24	0,85

Abdomen 1,47 long, 1,18 wide, 1,24 high, extending posteriad of spinnerets for 0,47 length. Epigynum as in Figs 72–74, atrium narrow, 0,35 abdomen width; with small anterior scape and small posteromedian lobe. Spermathecae (Fig. 115) with large ventral bursal chambers, weakly sclerotised, and small dorsal receptacula, heavily sclerotised; fertilisation duct dorsal.

Variation: Total length 1,25–1,27. Carapace height 0,43–0,49 width; ocular area width 2,11–2,22 times length; distance AME–AME 0,21–0,36 AME diameter, AME–ALE 0,71–1,07 times AME; PME–PLE 0,93–1,33 times PME; labium width 1,31–1,50 times length; dorsum of abdomen marked as in ♂, or all black.

Distribution: Nkandla Forest, Zululand, South Africa.

Material examined: SOUTH AFRICA: *Natal:* Nkandla Forest, Zululand (28°43'S:31°08'E), el. 1200 m, sweeping shrubs (♂ holotype, ♀ paratype; NM type 3383), ♀ (paratype), 20.ix.1983, P. Reavell, deposited in NM.

Isicabu zuluensis sp. n.

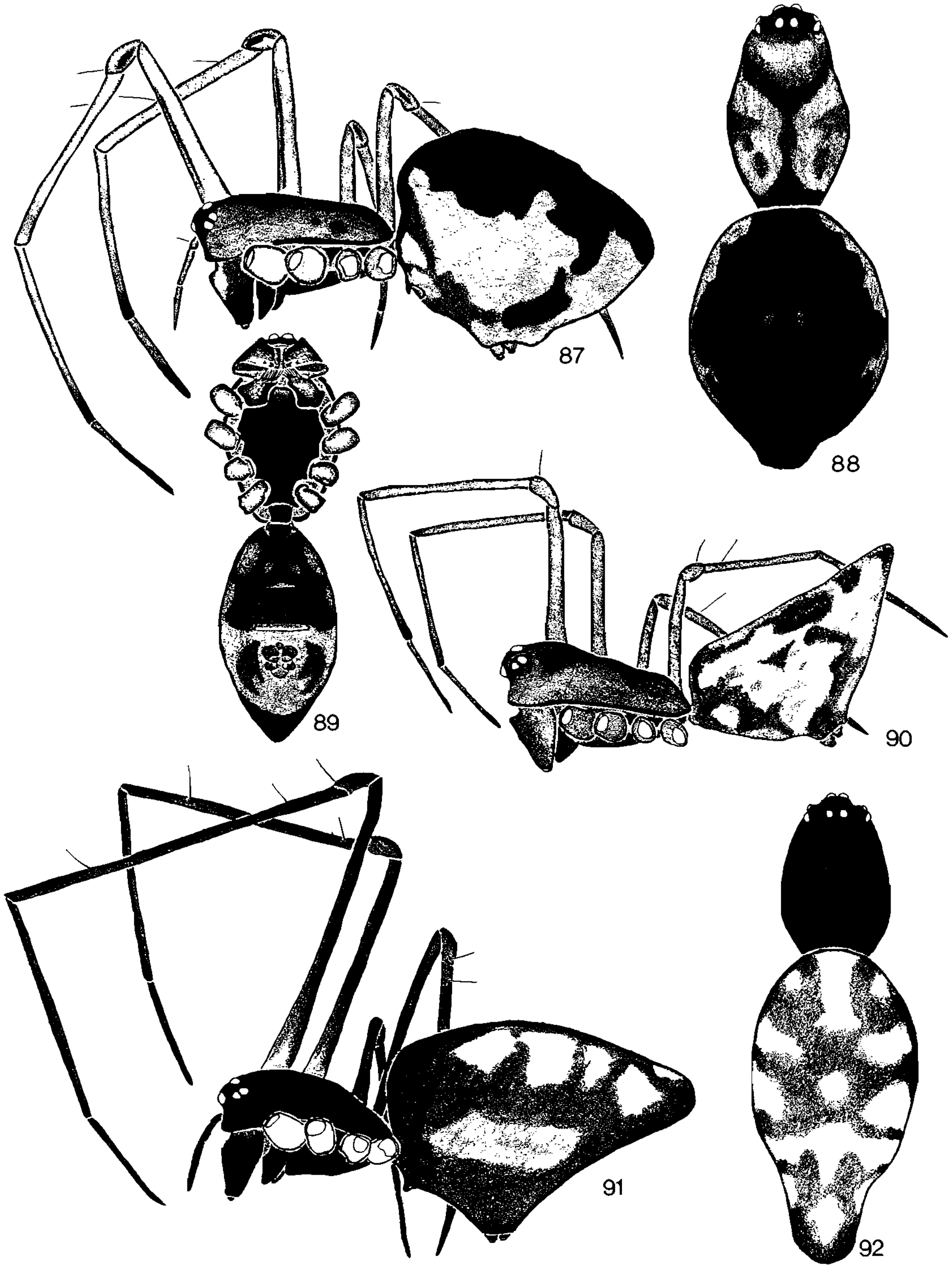
Figs 90, 96–101

Etymology: Refers to the occurrence in Zululand.

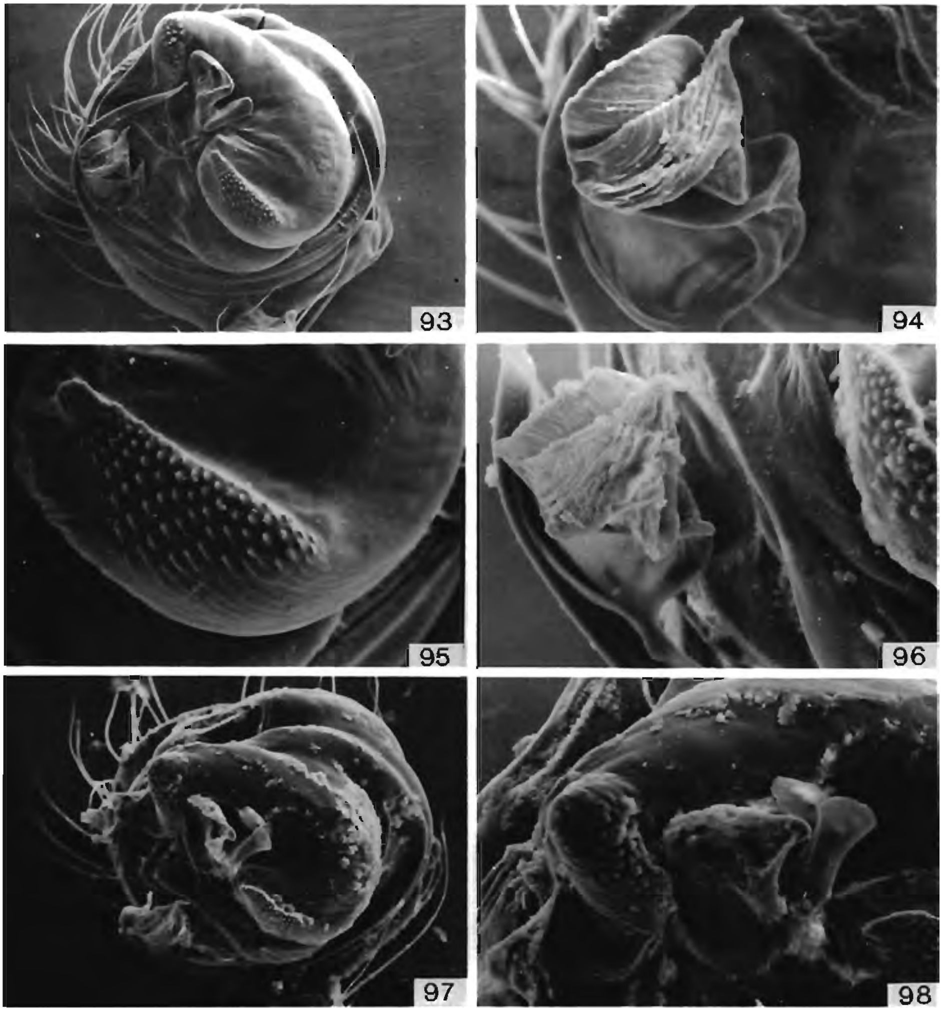
Diagnosis: Distinguished from *capensis* sp. n. by having much shorter legs (femur I 0,97 carapace length) (Fig. 90) and by details of the palpal bulb (Figs 96–101), and from *reavelli* sp. n. by having the femora unmarked and by the markings of the abdomen (Fig. 90).

Male (holotype): Total length 2,16. Carapace red-brown, black surrounding AME and along inner margin of lateral eyes, dark maculations radiating anteriorly, laterally, and posteriorly from fovea, and darkened along carapace margin, especially posteriorly; chelicerae and palpal coxae dark red-brown, labium dark brown, sternum black; coxae and legs pale yellow-white, unmarked except for dusky lateral maculations on patellae. Abdomen (Fig. 90) yellow-white with bright white subcutaneous deposits; with paired dark dorsomedian longitudinal bands joined behind middle, broken dorsolateral bands and dark apex, dark grey ventrally and laterad of spinnerets, with brown sclerotisation between epigastric furrow and pedicle.

Carapace (Fig. 90) low, inclined, 1,18 long, 0,65 wide, 0,41 high, row of fine setae between lateral eyes and fovea and pair in median ocular quadrangle; thoracic fovea a broad, shallow pit; clypeus 0,18 high, height 2,40 times AME diameter. Ocular area 0,42 wide, 0,19 long; distance AME–ALE ⅘ AME diameter, PME–PME ⅔ PME, PME–PLE 1¼ PME; ratio of eyes AM:AL:PM:PL, 1,25:1,17:1,00:1,33, diameter PME 0,06. Chelicerae 0,40 long, with prominent



Figs 87–92. *Isicabu* spp. 87–89. *I. reavelli* sp. n. 87–88. ♀. 89. ♂. 90. *I. zuluensis* sp. n., ♂. 91–92. *I. capensis* sp. n., ♀. 87, 90–91. Lateral. 88, 92. Dorsal. 89. Ventral.



Figs 93–98. *Isicabu* spp., l. ♂ palpi. 93–95. *I. reavelli* sp. n. 96–98. *I. zuluensis* sp. n. 93, 97. Ventral. 94, 96. Parembolic process. 95. Median tegular protuberance, 73 ×. 98. Apical lobe and bipartite median apophysis, 273 ×. 93. 124 ×. 94. 456 ×. 96. 404 ×. 97. 121 ×.

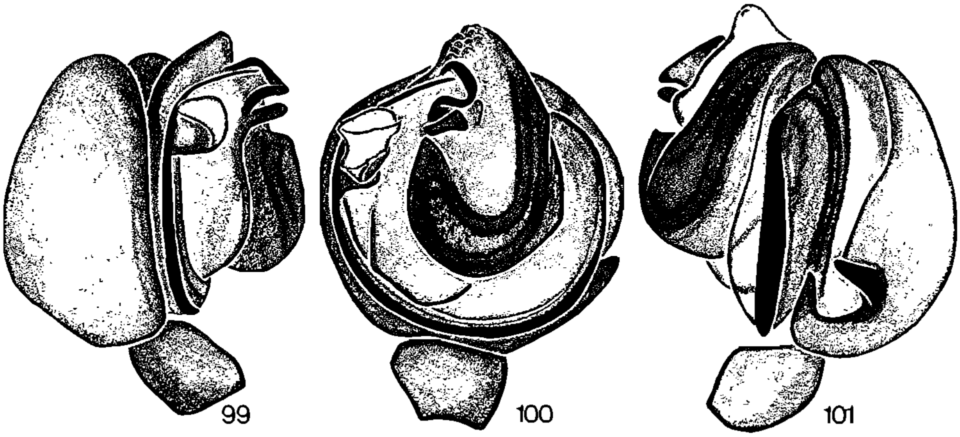
anterior subbasal projection. Sternum 0,59 long, 0,50 wide; labium 0,12 long, 0,17 wide; palpal coxa 0,23 long, 0,12 wide.

Legs sparsely covered with long, slender setae; femur I 0,97 length carapace; leg measurements:

	I	II	III	IV	Palpus
Femur	1,14	1,04	0,67	0,80	0,35
Patella	0,25	0,24	0,14	0,21	0,11
Tibia	1,02	0,88	0,49	0,67	0,10
Metatarsus	0,88	0,78	0,43	0,61	—
Tarsus	0,53	0,49	0,33	0,35	0,29
Total	3,82	3,43	2,06	2,64	0,85

Abdomen 1,06 long, 0,69 wide, 0,73 high, extending posteriad of spinnerets for 0,41 length and ending in acute point (Fig. 90); venter between epigastric furrow and pedicle weakly sclerotised.

Palpus much as in *reavelli* sp. n.; paracymbial notch as in Fig. 101; bulb as in Figs 96–101; embolus with apex simple; parembolic process large, broad, folded (Fig. 96); upper and lower articles of median apophysis of equal length (Fig. 99); median tegular protuberance forming a low ridge (Fig. 97).



Figs 99–101. *Isicabu zuluensis* sp. n., l. ♂ palpal tibia and tarsus. 99. Anterolateral. 100. Ventral. 101. Retrolateral.

Female: Unknown.

Distribution: Coastal lowlands of Zululand, South Africa. A damaged male, presumably of this species, was collected near Pietermaritzburg.

Material examined: SOUTH AFRICA: *Natal:* Dukuduku Forest, Zululand (28°23'S;32°19'E), ♂ (holotype, NM type number 3384), 22.i.1980, P. Reavell, deposited in NM; Town Bush Forest, Pietermaritzburg, ♂, 20.ix.1984, T. Meikle Griswold & C. Griswold (NM).

Isicabu capensis sp. n.

Figs 75–83, 91–92, 102–110, 116

Etymology: Refers to the occurrence in the Cape Province.

Diagnosis: Distinguished from other *Isicabu* species by the very elongate legs (femur I greater than twice length carapace) (Fig. 91), male palpus with the embolus expanded near apex and fimbriate ventrally (Figs 106, 108), and the median apophysis with the lower article smaller than the upper (Fig. 102).

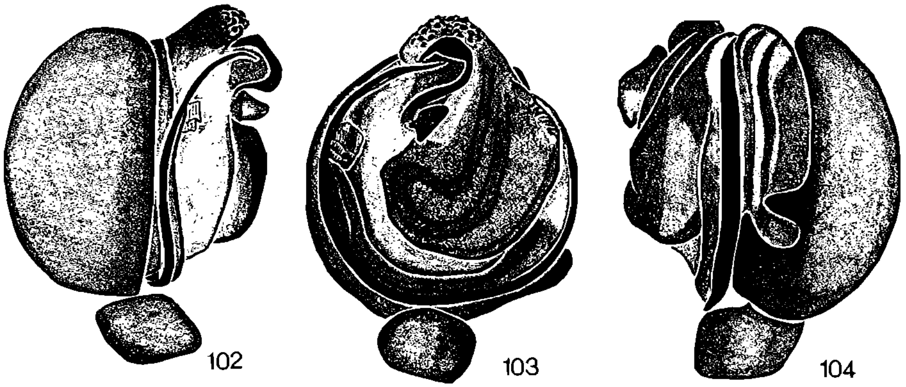
Male (holotype): Total length 2,81. Carapace, chelicerae, sternum, labium, and palpal coxae dark brown, unmarked except for black around each eye; coxae and trochanters yellow-white, legs yellow-brown, palest basally on femora; palpus with femur to tibia yellow-brown, cymbium dark brown. Abdomen dark grey, dorsum with longitudinal rows of 3 median and 4 dorsolateral light grey spots, sides paler, venter dark grey, weak brown sclerotisation between epigastric furrow and pedicle, including book-lung covers.

Carapace domed, 1,02 long, 0,71 wide, 0,29 high, glabrous; thoracic fovea deep, longitudinal; clypeus 0,16 high, height 2,13 times AME diameter. Ocular area 0,44 wide, 0,20 long; OQP 1,27 times OQA; distance AME–ALE equal to AME diameter, PME–PME $\frac{3}{4}$ PME, PME–PLE 1$\frac{1}{3}$ times PME; ratio of eyes AM:AL:PM:PL, 1,25:1,00:1,08:1,17, diameter PME 0,07. Chelicerae 0,40 long, with weak anterior subbasal projection. Sternum 0,55 long, 0,52 wide; labium, 0,13 long, 0,20 wide; palpal coxa 0,21 long, 0,14 wide, short, length 1,50 times width.

Legs sparsely covered with short, slender hairs; femur I 2,63 times carapace length; leg measurements:

	I	II	III	IV	Palpus
Femur	2,69	2,02	0,96	1,45	0,27
Patella	0,29	0,25	0,20	0,22	0,12
Tibia	2,53	1,96	0,78	1,14	0,10
Metatarsus	2,16	1,49	0,69	0,88	—
Tarsus	0,96	0,78	0,43	0,47	0,31
Total	8,63	6,50	3,06	4,16	0,80

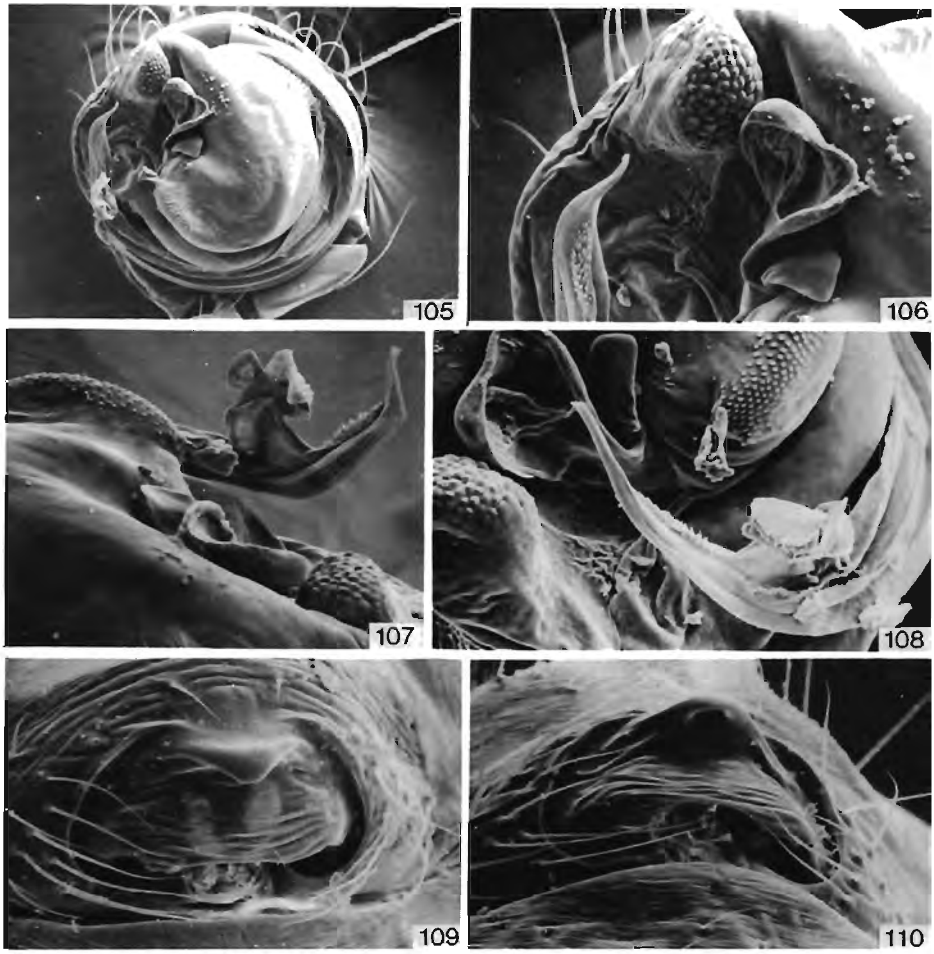
Abdomen 1,65 long, 0,69 wide, 0,80 high, greatly prolonged posteriad of spinnerets for 0,51 length; venter weakly sclerotised between epigastric furrow and pedicle.



Figs 102–104. *Isicabu capensis* sp. n., l. ♂ palpal tibia and tarsus. 102. Anterolateral. 103. Ventral. 104. Retrolateral.

Palpus with paracymbial notch as in Fig. 104, bulb as in Figs 102–108; embolus broad, abruptly narrowed before tip, inner surface fimbriate subapically (Fig. 106); parembolic process broad, folded (Fig. 107); upper article of median apophysis longer than lower (Fig. 105); median tegular protuberance convex, not forming ridge (Fig. 108).

Variation: Total length 2,20–2,85. Carapace height 0,42–0,51 width; ocular area width 2,10–2,20 times length; distance AME–AME 0,20–0,33 AME diameter, AME–ALE 1,07–1,42 times AME, PME–PLE 1,38–1,67 times PME; clypeal



Figs 105–110. *Isicabu capensis* sp. n. 105–108. ♂ palpus, l. 109, 110. Epigynum. 105. Ventral, 110 ×. 106. Pustulate apical lobe, bipartite median apophysis, and fimbriate venter of embolic apex, 284 ×. 107. Parembolic process, 273 ×. 108. Centre of bulb with median apophysis, denticulate median tegular protuberance, and embolus, 273 ×. 109. Ventral, 175 ×. 110. Oblique posterior, 175 ×.

height 2,13–3,17 times AME diameter; femur I 2,63–2,98 times carapace length; apex of abdomen prolonged behind spinnerets for 0,45–0,66 length.

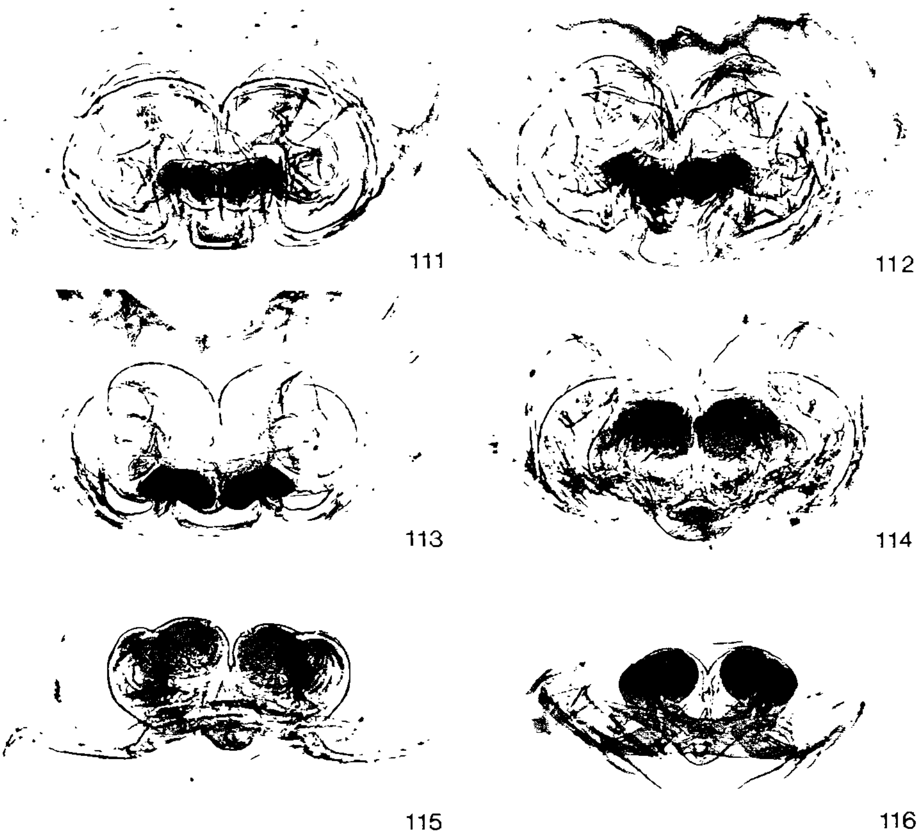
Female (paratype): Total length 2,90. Markings as in ♂ except light markings on abdomen (Figs 91–92) larger, confluent. Structure essentially as in ♂. Carapace 1,00 long, 0,67 wide, 0,31 high, granulate (Fig. 80); clypeus 0,15 high, height 2,14 times diameter AME. Ocular area 0,41 wide, 0,19 long, OQP 1,07 times OQA; distance AME–ALE equal to AME diameter, PME–PME ⅔ PME, PME–PLE 1⅓ times PME; ratio of eyes AM:AL:PM:PL, 1,08:1,00:1,00:1,08, diameter PME 0,07. Chelicerae 0,44 long; sternum 0,56 long, 0,52 wide; labium 0,12 long, 0,17 wide; palpal coxae 0,17 long, 0,13 wide.

Femur I 2,25 times carapace length; leg measurements:

	I	II	III	IV	Palpus
Femur	2,25	1,67	0,84	1,33	0,24
Patella	0,27	0,25	0,22	0,22	0,08
Tibia	2,12	0,61	0,67	0,94	0,14
Metatarsus	1,67	1,20	0,59	0,75	—
Tarsus	0,82	0,69	0,41	0,43	0,35
Total	7,13	4,42	2,73	3,67	0,81

Abdomen 1,49 long, 1,00 wide, 1,27 high, prolonged posteriad of spinnerets for 0,50 length. Epigynum as in Figs 75–77; atrium narrow, 0,25 width abdomen; with small anterior scape; posteromedian lobe reduced. Spermathecae (Fig. 116) with large ventral bursal chambers, weakly sclerotised, and small, bilobed dorsal receptacula, heavily sclerotised.

Variation: Total length 2,20–2,95. Carapace height 0,45–0,48 width; ocular area width 2,16–2,41 times width; distance AME–AME 0,20–0,31 AME diameter, AME–ALE 1,00–1,23 times AME, PME–PLE 1,17–1,45 times PME; clypeus height 1,85–2,14 times AME diameter; femur I 2,10–2,25 times carapace length.



Figs 111–116. Cyatholipidae, spermathecae, cleared, dorsal. 111–113. *Ulwembua* spp. 111. *U. pulchra* sp. n. 112. *U. denticulata* sp. n. 113. *U. outeniqua* sp. n. 114. *Ilisoa hawequas* sp. n. 115, 116. *Isicabu* spp. 115. *I. reavelli* sp. n. 116. *I. capensis*. sp. n.

Distribution: Table Mountain near Cape Town, South Africa.

Material examined: SOUTH AFRICA: *Cape:* Skeleton Gorge Forest, Table Mountain, Kirstenbosch (33°59′S;26°18′E), el. 700–1000 ft, from sheet webs between mossy boulders, ♂ (holotype, NM type number 3385), 26,29.x.1985, C. E. Griswold, J. Doyen, and T. Meikle Griswold, deposited in NM. Paratypes, 4 ♂, 18 ♀, same data: ♂ ♀ (AMNH), ♂ ♀ (CAS), ♂ ♀ (MRAC), ♀ (NCP), ♀ (BMNH), ♀ (SMF), ♀ (MNHN), ♀ (USNM), ♀ (OMD), ♀ (NMZ), remaining ♂, 8 ♀ (NM).

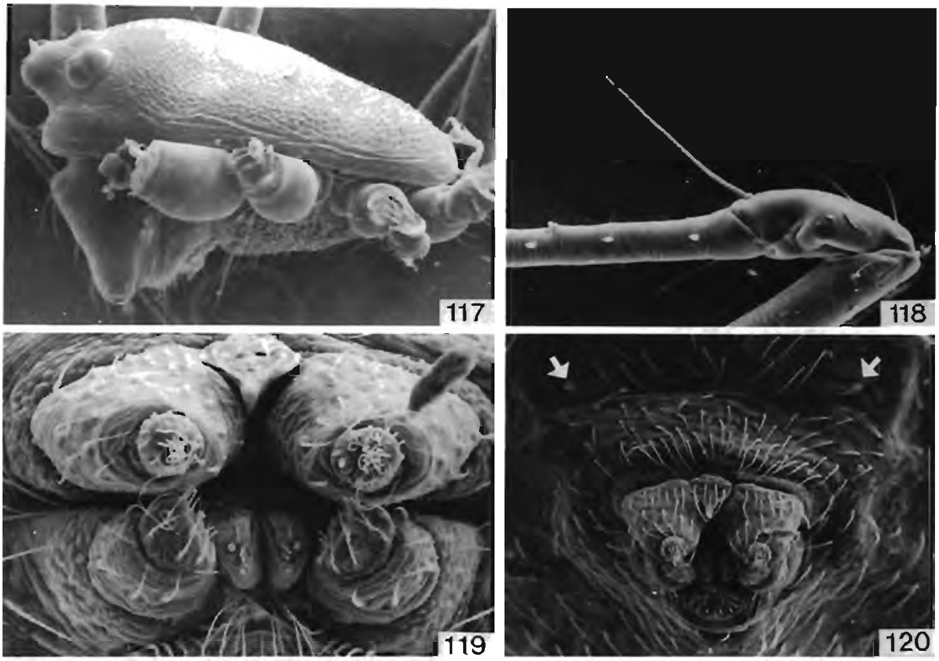
Ulwembua gen. n.

Type species: *Ulwembua pulchra* sp. n.

Etymology: Zulu *ulwembu*, a web-building spider. Gender feminine

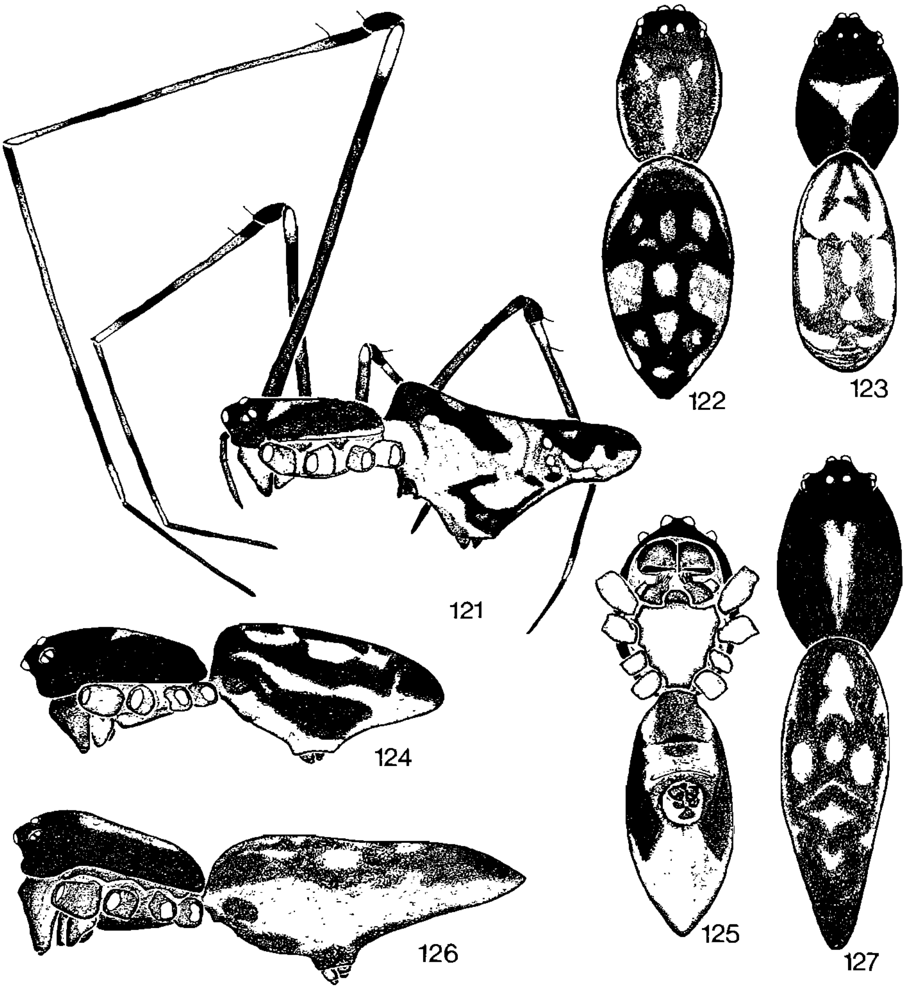
Diagnosis: Abdomen triangular (Figs 121, 124, 126), venter sclerotised around spinnerets and anterior to epigastric furrow (Fig. 125); legs elongate (Fig. 121), femur I greater than 1,80 times carapace length; epigynum broad, atrium width greater than 0,40 abdomen; spermathecae with voluminous anterior membranous bursal ducts (Figs 111–113); male palpus with median apophysis simple, median to subbasal (Figs 129, 144), parembolic process absent (Fig. 149).

Description: Carapace low, inclined to weakly domed, height 0,39–0,50 length. Ocular area 2,11–2,30 times wider than long, ocular quadrangle usually wider in front, AER strongly, PER weakly recurved; AME separated by ⅕ diameter, PME



Figs 117–120. *Ulwembua outeniqua* sp. n. 117. ♂ carapace, lateral, 58 ×. 118. ♂ patella IV with dorsoapical bristle, 111 ×. 119. ♀ spinnerets, posterior, 276 ×. 120. ♀ spinnerets, ventral, and tracheal groove (arrows point to spiracles), 111 ×.

separated from PLE by greater than 1½ diameter, lateral eyes nearly contiguous; clypeus weakly concave; chelicerae with weak anterior projection, margin of fang furrow with 4 large promarginal and 3 small retromarginal teeth. Sternum usually longer than wide (Fig. 125), rarely shorter, weakly rugose, with scattered setae. Legs very elongate, femur I greater than 1,80 times carapace length; leg formula 1243; legs with scattered short, fine setae. Abdomen triangular, extending posteriad of spinnerets for greater than 0,30 length, sparsely covered with fine setae; venter sclerotised around spinnerets and between epigastric furrow and pedicle. Epigynum (Figs 134–142) with atrium broad, greater than 0,45 abdomen width, with anterior scape or median lobe; posteromedian lobe large (Figs 135, 138, 141); spermathecae with voluminous membranous bursal ducts leading from



Figs 121–127. *Ulwembua* spp. 121, 122. *U. denticulata* sp. n., ♀. 123–125. *U. pulchra* sp. n. 123. ♀. 124–125. ♂. 126, 127. *U. outeniqua* sp. n., ♂. 121, 124, 126. Lateral. 122, 123, 127. Dorsal. 125. Ventral.

copulatory pores anteriorly, and emptying into small, dorsal sclerotised receptacula (Figs 111–113). ♂ palpus with lower paracymbial lobe much larger than upper (Figs 130, 145); embolus extending slightly (Fig. 143) to greatly (Fig. 128) beyond cymbial margin, parembolic process absent (Fig. 149); tegulum swollen anteromedially, apical lobe weak; median apophysis simple, median (Fig. 144) to subbasal (Fig. 129), median tegular protuberance weak, denticulate.

Ulwembua pulchra sp. n.

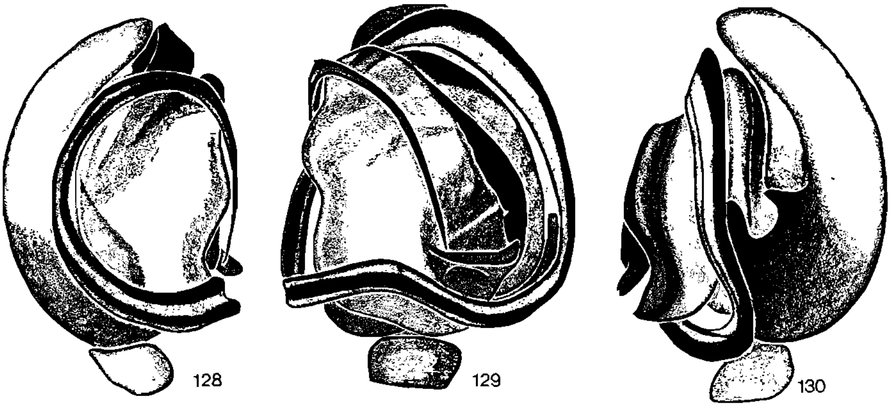
Figs 111, 123–125, 128–133, 140–142

Etymology: L. *pulcher*, beautiful, fine.

Diagnosis: Dorsum of carapace (Fig. 123) with broad, posteriad-directed light triangle just anterior to fovea; femora, tibiae, and metatarsi with pale apical annuli; abdomen with complete dorsolateral black band (Fig. 124); distinguished from *denticulata* sp. n. by having median epigynal lobe broad and 2 copulatory openings (Fig. 140), and from *outeniqua* sp. n. by details of epigynum (Fig. 140) and palpal bulb (Figs 128–133).

Male (holotype): Total length 2,41. Carapace dark brown, with broad posteriad-directed yellow-brown triangle on dorsum, narrow yellow-brown band encompassing fovea; chelicerae and labium yellow-brown, sternum and palpal coxae yellow-white; coxae and trochanters pale grey, legs grey-brown except white proximally and apically on femora, and apically on patellae III and IV, tibiae, and metatarsi; palpus with cymbium grey-brown. Abdomen off-white, black anteriorly and with ventrolateral incomplete and dorsolateral complete longitudinal black bands (Fig. 124); dorsum with anterior and median pairs of white spots and posterior cross outlined in black; apex of abdomen black dorsally, white ventrally; venter (Fig. 125) sclerotised yellow-brown surrounding spinnerets and between epigastric furrow and pedicle.

Carapace (Fig. 124) low, domed, 1,10 long, 0,73 wide, 0,31 high, rugose; thoracic fovea deep, longitudinal; clypeus 0,16 high, height 1,88 times AME



Figs 128–130. *Ulwembua pulchra* sp. n., l. ♂ palpal tibia and tarsus. 128. Anterolateral. 129. Ventral. 130. Retrolateral.

diameter. Ocular area 0,46 wide, 0,20 long, ocular quadrangle slightly narrowed anteriorly; distance AME–ALE ¾ AME diameter, PME–PME nearly equal to PME, PME–PLE 1¾ times PME; ratio of eyes AM:AL:PM:PL, 1,42:1,25:1,00:1,17, diameter PME 0,06. Chelicerae 0,38 long, with weak anterior projection. Sternum 0,52 long, 0,51 wide; labium broad, 0,11 long, 0,19 wide; palpal coxa 0,18 long, 0,13 wide, short, length 1,38 times width.

Femur I 2,67 times carapace length; leg measurements:

	I	II	III	IV	Palpus
Femur	2,94	1,49	0,69	1,12	0,27
Patella	0,24	0,22	0,18	0,18	0,12
Tibia	2,86	1,37	0,57	0,88	0,10
Metatarsus	2,71	1,20	0,55	0,75	—
Tarsus	1,10	0,67	0,37	0,39	0,47
Total	9,85	4,95	2,36	3,32	0,96

Abdomen 1,37 long, 0,63 wide, 0,75 high, extending posteriad of spinnerets for 0,44 length.

Palpus with paracymbial notch as in Fig. 130; embolus broad, extending beyond anterior margin of cymbium and looping across base of tegulum (Figs 131, 133); tegulum with apical lobe weak, smooth; median apophysis subbasal, large, cup-like, with weakly denticulate margin (Fig. 132); median tegular protuberance weak, with small denticulate patch.

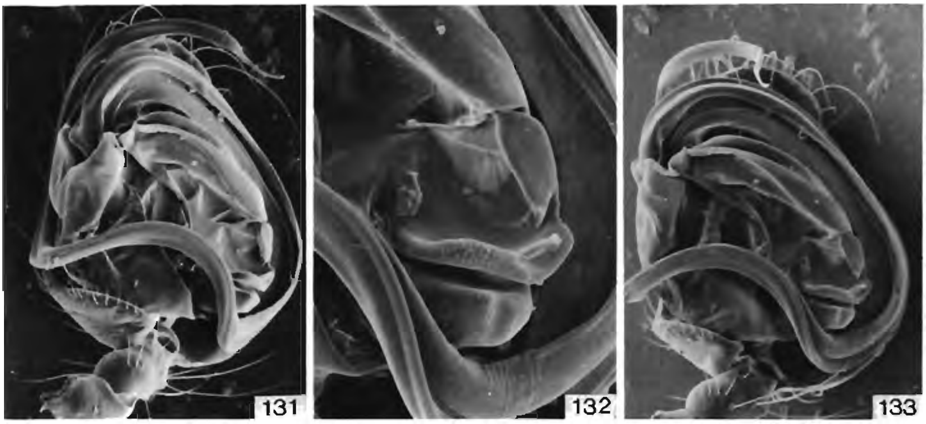
Variation: Total length 2,04–2,41. Ocular area width 2,14–2,30 times length; OQP 0,84–1,06 times OQA; distance PME–PME 0,57–0,92 PME diameter, PME–PLE 1,57–1,83 times PME; clypeal height 1,88–2,38 times AME diameter; sternum length 0,94–1,02 times width; femur I 2,33–3,15 times carapace length.

Female (paratype): Total length 2,12. Markings (Fig. 123) and structure as in ♂. Carapace 0,90 long, 0,61 wide, 0,25 high, weakly denticulate posterolaterally; clypeus 0,09 high, height 1,59 times diameter AME. Ocular area 0,40 wide, 0,19 long, ocular quadrangle slightly narrowed behind; distance AME–ALE greater than AME diameter, PME–PLE 1½ times PME; ratio of eyes AM:AL:PM:PL, 1,27:1,09:1,00:1,09, diameter PME 0,06. Chelicerae 0,27 long with pronounced anterior projection; sternum 0,55 long, 0,57 wide; labium 0,10 long, 0,16 wide; palpal coxae 0,17 long, 0,11 wide.

Femur I 1,85 times carapace length; leg measurements:

	I	II	III	IV	Palpus
Femur	1,67	1,08	0,57	0,90	0,20
Patella	0,24	0,20	0,17	0,20	0,06
Tibia	1,55	0,88	0,41	0,65	0,12
Metatarsus	1,39	0,80	0,43	0,57	—
Tarsus	0,76	0,57	0,16	0,39	0,29
Total	5,61	3,53	1,74	2,71	0,67

Abdomen 1,12 long, 0,63 wide, 0,67 high, prolonged posteriad of spinnerets for 0,40 length. Epigynum as in Figs 140–142, atrium broad, 0,72 abdomen width, surrounding broad medial lobe; copulatory openings paired; posteromedian lobe weakly ridged anteriorly. Spermathecae (Fig. 111) with voluminous anterior and convoluted lateral membranous bursal ducts emptying into small, dorsal, sclerotised receptacula; fertilisation duct dorsal.



Figs 131–133. *Ulwembua pulchra* sp. n., l. ♂ palpus. 131. Anteroventral, 101 ×. 132. Median apophysis, 247 ×. 133. Ventral, 104. ×.

Distribution: Dlinza Forest, Zululand, South Africa.

Material examined: SOUTH AFRICA: *Natal:* Zululand, Dlinza Forest, Eshowe (28°53'S;31°28'E), el. 1800 ft, hanging beneath sheet webs on tree buttresses, ♂ (holotype, NM type number 3386), 28.vi.1986, C. E. Griswold, deposited in NM. Paratypes: same data, 2 ♂ ♀ (NM); same locality, 6.x.1986, ♂ ♀ (MRAC), ♂ ♀ (AMNH), ♂ ♀ (CAS), ♂ ♀ (BMNH), ♀ (NCP), remaining 2 ♂ 4 ♀ (NM).

Ulwembua denticulata sp. n.

Figs 112, 121, 134–136

Etymology: Refers to the strongly denticulate posterodorsal surface of the carapace.

Diagnosis: Dorsum of carapace with yellow-brown Y-shaped mark (Fig. 122); legs with subapical dark annuli on femora, basal and subapical annuli on tibiae and metatarsi (Fig. 121); abdomen with lateral black bands incomplete; distinguished from *outeniqua* sp. n. by having the epigynum with a median lobe, and from *pulchra* sp. n. by having the epigynum (Fig. 134) with a narrow median lobe and single, broad copulatory opening.

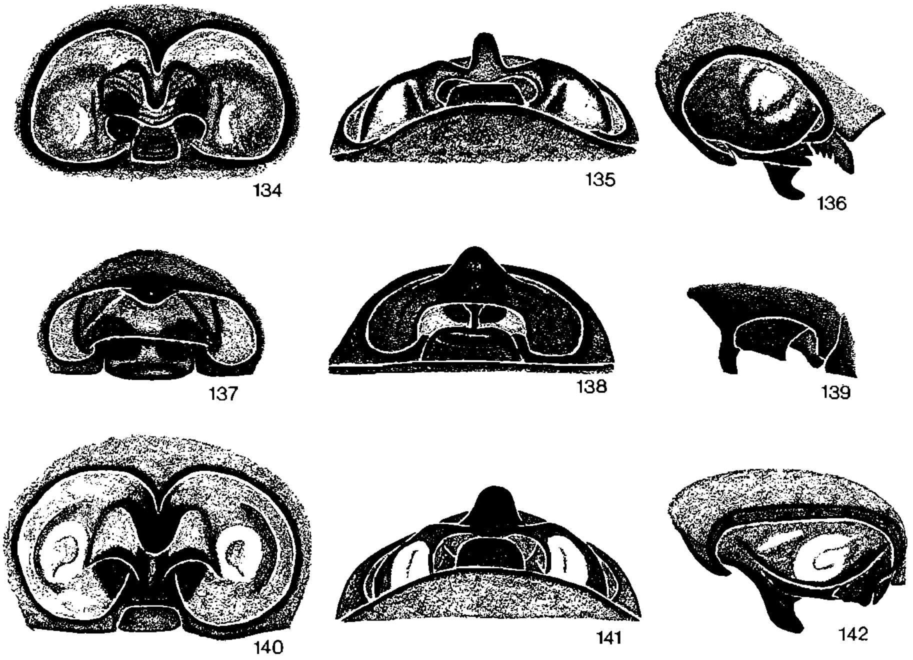
Female (holotype): Total length 2,12. Carapace (Fig. 122) brown shading to yellow-brown at sides, median yellow band extending from cephalic region to posterior margin, diagonal yellow-brown marks at apex of band forming 'Y'; black pigment along inner margin of each eye and between AME. Chelicerae, labium, palpal coxae and sternum yellow-brown, sternum darker along margin. Coxae and trochanters yellow-white; legs (Fig. 121) yellow-brown except femora, tibiae, and metatarsi with basal and subapical dark annuli and pale apices, patellae dark, and tarsi dark basally; palpus yellow-brown, patella dusky. Abdomen yellow-white with white deposits showing through cuticle; dorsum as in Fig. 122, black marking broad at base, narrowed in centre, and broadened apically, encompassing 3 light spots anteriorly, 1 in centre, and 4 arranged in a cross pattern posteriorly; sides and venter pale with brown sclerotisation surrounding spinnerets and between epigynum and pedicle.

Carapace (Fig. 121) low, flat, 0,84 long, 0,55 wide, 0,27 high, rugose and with tiny, sharp denticles posterolaterally (Fig. 122); thoracic fovea shallow, indistinct; clypeus 0,10 high, height 1,54 times AME diameter. Ocular area 0,36 wide, 0,17 long, ocular quadrangle narrowed posteriorly; distance AME–ALE ⅔ AME diameter, PME–PME ⅔ PME, PME–PLE 1⅔ times PME; ratio of eyes AM:AL:PM:PL, 1,30:1,20:1,00:1,30, diameter PME 0,05. Chelicerae 0,28 long with weak anterior projection (Fig. 121). Sternum 0,49 long, 0,41 wide; labium 0,12 wide, 0,10 long; palpal coxa narrow, 0,20 long, 0,12 wide.

Femur I (Fig. 121) 2,63 times carapace length; leg measurements:

	I	II	III	IV	Palpus
Femur	2,16	1,31	0,59	1,02	0,20
Patella	0,23	0,19	0,16	0,18	0,07
Tibia	1,92	1,00	0,41	0,76	0,13
Metatarsus	1,90	0,98	0,47	0,61	—
Tarsus	0,86	0,59	0,35	0,39	0,29
Total	7,07	4,07	1,98	2,96	0,69

Abdomen 1,27 long, 0,67 wide, 0,69 high, prolonged posteriad of spinnerets for 0,48 length. Epigynum as in Figs 134–136, atrium broad, 0,75 abdomen width, surrounding narrow median lobe; single, broad, copulatory opening; posteromedian lobe strongly ridged anteriorly. Spermathecae (Fig. 112) with voluminous



Figs 134–142. *Ulwembua* spp., epigyna. 134–136. *U. denticulata* sp. n. 137–139. *U. outeniqua* sp. n. 140–142. *U. pulchra* sp. n. 134, 137, 140. Ventral. 135, 138, 141. Posterior. 136, 139, 142. Lateral.

anterior and convoluted lateral membranous bursal ducts emptying into small, bilobed, sclerotised dorsal receptacula.

Distribution: Known only from the type locality in Zululand, South Africa.

Material examined: SOUTH AFRICA: *Natal:* Mevamhlope area, Zululand (28°44'S;31°49'E), on *Senecio*, dry area, ♀ (holotype, NM type number 3387), 20.ix.1979, P. E. Reavell, deposited in NM.

Ulwembua outeniqua sp. n.

Figs 9–13, 113, 117–120, 126–127, 137–139, 143–151

Etymology: An old name for the wet, cool-temperate forests along the southern Cape coast; from a Khoikhoi term meaning 'people laden with honey'.

Diagnosis: Distinguished from other *Ulwembua* species by epigynum having an anterior scape (Fig. 137), and ♂ palpus with embolus closely encircling bulb (Fig. 144) and apical lobe of tegulum pustulate (Figs 144, 147).

Male (holotype): Total length 2,98. Carapace dark brown, with red-brown longitudinal band extending from mid-cephalic region to posterior margin (Fig. 127); black pigment along margin of each eye and between AME; clypeus red-brown. Chelicerae, labium, palpal coxae and sternum brown, palpal coxae with median diagonal maculation, sternum dusky submarginally. Coxae and trochanters yellow-white, legs yellow-brown, unmarked; palpus with femur to tibia yellow-white, cymbium brown. Abdomen yellow-white, dorsum (Fig. 127) dark grey with anterior light mark, 3 light spots in centre, and transverse light mark posteriorly; venter with dusky median band, with brown sclerotisation between epigastric furrow and pedicle.

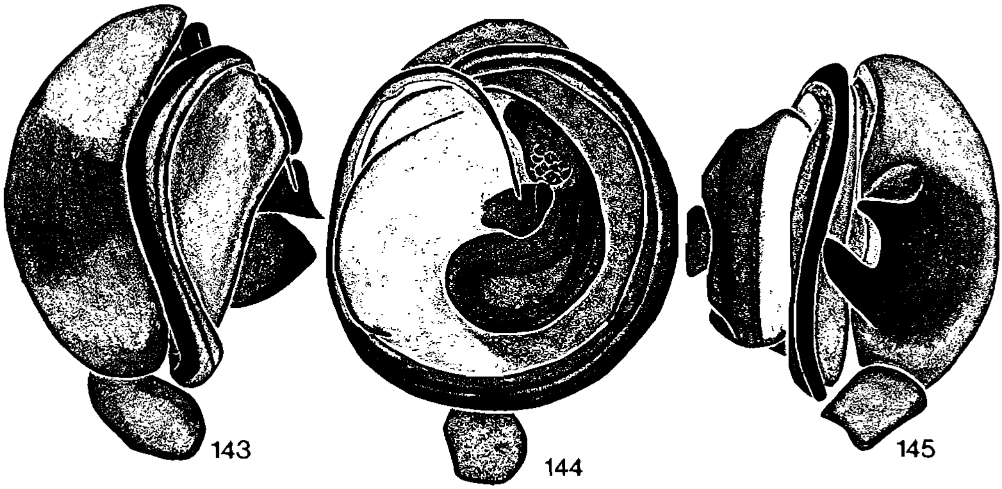
Carapace weakly domed (Fig. 117), 1,14 long, 0,71 wide, 0,33 high, granulate; thoracic fovea a longitudinal slit (Fig. 127); clypeus 0,14 high, height 1,87 times AME diameter. Ocular area 0,44 wide, 0,20 long, ocular quadrangle slightly narrowed posteriorly; distance AME–ALE 1⅓ times AME diameter, PME–PME ⅔ PME, PME–PLE 1⅔ times PME; ratio of eyes AM:AL:PM:PL, 1,25:1,17:1,00:1,08, diameter PME 0,06. Chelicerae 0,45 long, with strong subbasal anterior projection. Sternum 0,57 long, 0,53 wide; labium broad, 0,13 long, 0,19 wide; palpal coxa 0,22 long, 0,12 wide.

Femur I 2,62 times carapace length; leg measurements:

	I	II	III	IV	Palpus
Femur	2,98	1,84	0,82	1,31	0,31
Patella	0,29	0,24	0,20	0,22	0,12
Tibia	2,78	1,71	0,67	1,08	0,08
Metatarsus	2,51	1,41	0,61	0,80	—
Tarsus	1,02	0,71	0,39	0,41	0,39
Total	9,58	5,91	2,69	3,82	0,90

Abdomen 1,76 long, 0,63 wide, 0,75 high, greatly prolonged behind spinnerets for 0,56 length.

Palpus with paracymbial notch as in Figs 145, 148; embolus closely encircling bulb (Fig. 144), parembolic process absent (Fig. 149); tegulum with apical lobe prominent, pustulate (Fig. 147); median apophysis median (Fig. 146), narrow,



Figs 143–145. *Ulwembua outeniqua* sp. n., l. ♂ palpal tibia and tarsus. 143. Anterolateral. 144. Ventral. 145. Retrolateral.

expanded distally, margin smooth (Fig. 147); median tegular protuberance weak, denticulate (Fig. 144).

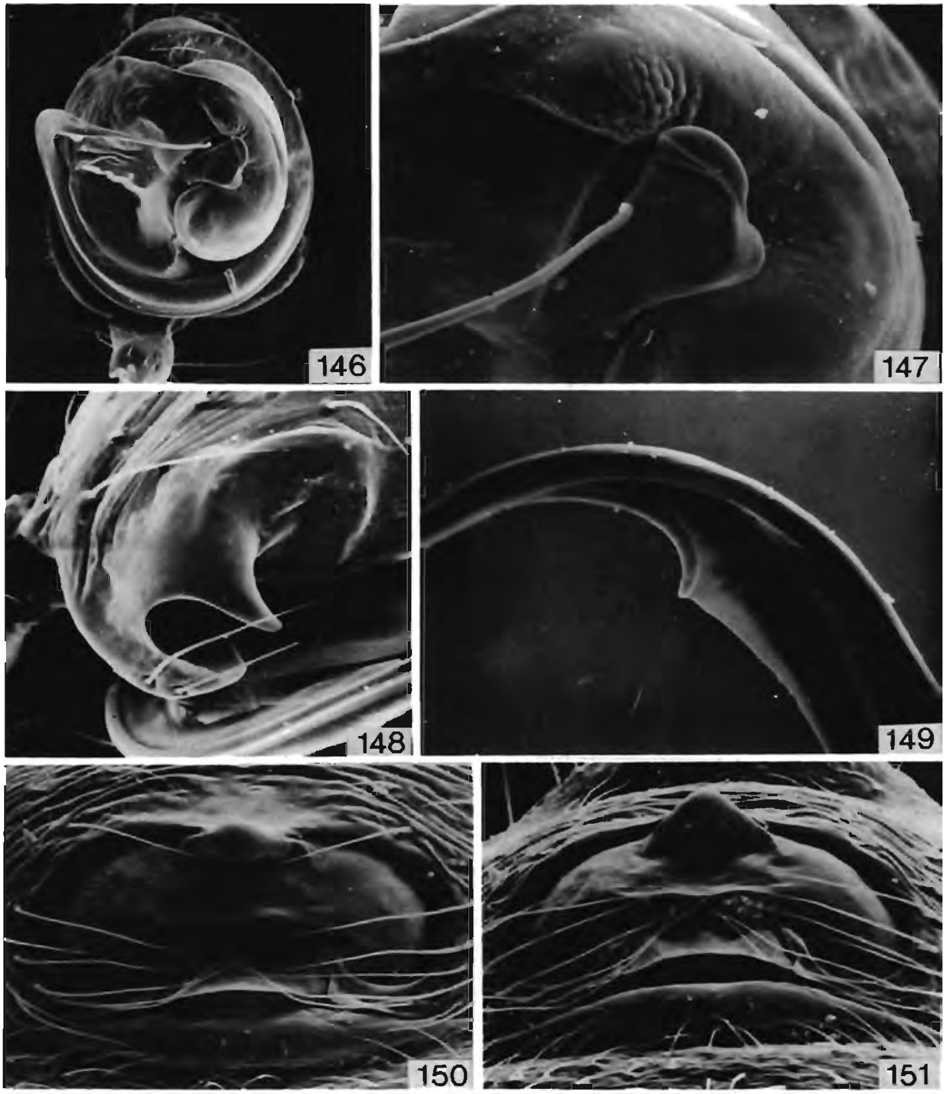
Variation: Total length 2,51–2,98. Carapace height 0,43–0,48 width; ocular area width 2,16–2,39 times length; distance AME–AME 0,13–0,31 AME diameter, AME–ALE 1,33–1,50 times AME, PME–PME 0,55–0,73 PME, PME–PLE 1,67–1,82 times PME; clypeal height 2,11–3,21 times AME diameter; length palpal coxa 1,50–1,83 times width; femur I 2,21–2,62 times carapace length.

Female (paratype): Total length 2,24. Markings and structure essentially as in ♂. Carapace 0,98 long, 0,61 wide, 0,27 high; clypeus 0,10 high, height 1,50 times AME diameter. Ocular area 0,41 wide, 0,17 long, ocular quadrangle rectangular; distance AME–ALE 1⅓ times AME, PME–PME ½ PME, PME–PLE 1½ PME; ratio of eyes AM:AL:PM:PL, 1,08:1,00:1,00:1,00, diameter PME 0,06. Chelicerae 0,41 long, with pronounced anterior projection; sternum 0,52 long, 0,48 wide; labium 0,13 long, 0,16 wide; palpal coxae broad, 0,19 long, 0,12 wide.

Femur I 2,08 times carapace length; leg measurements:

	I	II	III	IV	Palpus
Femur	2,04	1,39	0,69	1,16	0,22
Patella	0,25	0,22	0,20	0,20	0,10
Tibia	1,86	1,25	0,55	0,86	0,14
Metatarsus	1,59	1,04	0,47	0,67	—
Tarsus	0,80	0,63	0,39	0,41	0,29
Total	6,54	4,53	2,30	3,30	0,75

Abdomen 1,25 long, 0,65 wide, 0,73 high, prolonged posteriad of spinnerets for 0,41 length. Epigynum as in Figs 137–139, atrium broad, 0,56 width abdomen, with small anterior scape; copulatory opening single; posteromedian lobe large, smooth. Spermathecae (Fig. 113) with voluminous anterior membranous bursal ducts, looping dorsad of and emptying into small, sclerotised dorsal receptacula; fertilisation duct dorsal.



Figs 146–151. *Ulwembua outeniqua* sp. n. 146–149. l. ♂ palpus. 150–151. Epigynum. 146. Ventral, 92 ×. 147. Pustulate apical lobe and median apophysis, 301 ×. 148. Paracymbial notch, 207 ×. 149. Subapical sector of embolus, 654 ×. 150. Ventral, 219 ×. 151. Oblique posterior, 219 ×.

Variation: Total length 2,12–2,98. Carapace height 0,44–0,45 width; ocular area width 2,16–2,38 times length, OQP 1,00–1,08 times OQA; distance AME–ALE 1,08–1,38 times AME diameter, PME–PME 0,50–0,80 PME, PME–PLE 1,50–1,80 times PME; clypeal height 1,54–1,85 AME diameter; width labium 1,23–1,64 times length; femur I 2,00–2,15 times carapace length; epigynal atrium 0,45–0,57 width abdomen.

Distribution: Knysna Forest, at the base of the Outeniqua Mountains, southern Cape, South Africa.

Material examined: SOUTH AFRICA: *Cape:* Diepwalle Forest Station, 22 km NE Knysna (33°57′S;23°10′E), el. 1800 ft, beneath sheet webs attached to tree trunks, indigenous forest, ♂ (holotype, NM type number 3388), 13.i.1985, C. E. Griswold, deposited in NM. Paratypes, 11 ♂, 48 ♀, same locality, collected 10–13.i.1985, C. E. Griswold & T. Meikle Griswold, and 11–13.xi.1985, C. E. Griswold, J. T. Doyen & T. Meikle Griswold: ♂ ♀ (NCP), ♂ ♀ (BMNH), ♂ ♀ (OMD), ♂ ♀ (MRAC), ♂ ♀ (CAS), ♂ ♀ (USNM), 2 ♂ 2 ♀ (AMNH), 2 ♀ (SMF), 2 ♀ (NMZ), 2 ♀ (MNHN), remainder in NM.

DISCUSSION

While the correct placement of the Cyatholipidae within the broader group Araneoidea (Wunderlich 1978, Davies 1978) has never been doubted, it is not yet possible to propose a sister-group from among the araneoid families. Therefore, at present a detailed phylogenetic analysis of the relationships of the African taxa is impossible. Nevertheless, some probable relationships deserve mention.

The unique presence within the family of abdominal bristles in *Cyatholipus* (Figs 2, 5), *Ilisoa* (Fig. 58) and *'Cyatholipus' dentipes* Simon (Wunderlich 1978: Fig. 1) is presumably a synapomorphy uniting these taxa. Forster (in press) has suggested that *dentipes* Simon is not congeneric with the other *Cyatholipus*, and I concur. *'Cyatholipus' dentipes* is distinguished from the African *Cyatholipus* by having small spurs on metatarsus I of the male (Simon 1894: Fig. 788) and by details of the epigynum and male palpus. I have not examined the type of *dentipes*, but Wunderlich (1978) has provided illustrations upon which I base my comments. The epigynum of *dentipes* has a broad atrium which extends laterad and anteriad of an elongate, narrow scape. In this regard *dentipes* resembles *Ilisoa hawequas* (Fig. 69). The paracymbial notch of *dentipes* (Simon 1894: Fig. 789) resembles that of *Cyatholipus* (Figs 22, 31), but the bulb differs in several details. The embolic tip rests subbasally in what appears to be a small, simple median apophysis, and there appears to be an anteroapical tegular process as well. Without SEM examination of the bulb it is impossible to confirm the presence or absence of a parembolic process. Currently it is not possible to specify the interrelationships of the members of the clade containing *Cyatholipus, Ilisoa*, and *'Cyatholipus' dentipes*.

The inclusion of *outeniqua* in *Ulwembua* is problematical in that it requires that this genus be variable for certain characters: epigynum with scape (Fig. 137) or median lobe (Figs 134, 140); apical lobe of palpal bulb pustulate (Fig. 144) or reduced, smooth (Fig. 129); female carapace granulate or denticulate (Fig. 121) posteriorly; and the chelicerae with or without an anterior projection. In the above characters, *outeniqua* more closely resembles members of *Isicabu*. It is apparent, though, that the presence of an epigynal scape and granulate carapace in *Isicabu* and *Ulwembua outeniqua* are symplesiomorphic, while the alternative states, an epigynum with a median lobe and denticulate carapace, are merely synapomorphies uniting *Ulwembua pulchra* and *U. denticulata*. Concerning the former character, probable stages in the derivation of a median lobe from the epigynal scape are exemplified in the genera *Cyatholipus* and *Ilisoa*. *Cyatholipus* has the scape located on the anterior margin of the epigynal atrium (Figs 39, 42) whereas in

Ilisoa the depressed atrium is extended laterad and anteriad of the base of the scape (Fig. 69). One need only envision further extension of the lateral arms of the atrium to meet anteriorly, isolating the scape as a median lobe. On the other hand, some characters uniting *outeniqua* with the other *Ulwembua* species, including the absence of a parembolic process, may be derived. A small, subdistal expansion on the inner margin of the embolus of *outeniqua* (Fig. 149) may represent the vestige of a parembolic process, and thus the absence of the parembolic process may be a synapomorphy uniting the *Ulwembua* species. On the basis of this presumed synapomorphy, and upon the similarities of the spermathecae (having the membranous bursal ducts capacious anteriorly) and carapace markings (with a dorsal longitudinal pale mark), *outeniqua* is tentatively included in *Ulwembua*. The species of *Isicabu* are united by the unique, and clearly synapomorphic, bipartite median apophysis (Figs 84–85).

It is hoped that the place of the Cyatholipidae within the Araneoidea may be determined, and a phylogenetic analysis of the entire family undertaken. This family may be a key taxon in understanding the evolution and biogeography of the former Gondwanaland biota.

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